GAS JOURNAL

LIGHT ⁘ HEAT ⁘ POWER ⁘ BYE-PRODUCTS

[Founded in 1849 as the "Journal of Gas Lighting."]

PROPRIETORS: WALTER KING, LIMITED. OFFICE: 11, BOLT COURT, FLEET ST., LONDON, E.C. 4.

Telephone: Central 6055. —— Telegrams: "GASKING, FLEET, LONDON."

VOL. CLXXVII., No. 3321.] WEDNESDAY, JANUARY 12, 1927. [79TH YEAR.

EDITORIAL NOTES.

Price Reductions—A Politic Course.

THERE is better news for gas consumers. The price of gas has been forced up through the coal stoppage to heights which have not been experienced for a long time. Consumers are anxious for the charges to be reduced; but it is imperative that the higher payments which have been made for coal delivered on works should be liquidated as quickly as possible, so as to start off again with a clean slate in that respect. There must be patience on the part of consumers; for it is, generally speaking, better in the interests of all concerned to clear off extraordinary costs occasioned by unusual circumstances as near to their incidence as is possible. The administration of every gas undertaking is estimating the probabilities of the current quarter; and it is well to take the most generous view, in order that consumers may be assured that the addition to prices is within measurable distance of being wholly or partially cancelled. The South Metropolitan Company gave notice of a reduction on the termination of the stoppage; and now we have the Gas Light and Coke Company intimating that of the full increase of 2·2d. per therm which they had to make, 1·4d. will be taken off at the end of the March quarter, which will leave the addition at only 0·8d. Other companies have also given notices of reductions at the end of March. To make a forecast of ability to effect a reduction three months hence carries with it responsibility; but it is excellent policy, in current circumstances, to impress as much as possible the temporary character of the increase in charges. Early announcement of a lower price from next meter reading should therefore be made wherever possible. Our electrical rivals are retracing their steps in the matter of charges; coal retailers say that householders will not buy at present prices other than in small quantities; and every day brings us a step nearer lighter and warmer weather. We hope to be able to record many more announcements of prospective (if not immediate) reductions. In every gas-supply area, such a notification will be received as a guarantee of good faith, and will be of advantage in the trading conditions of to-day.

Australian Gas Institute.

THROUGH the kindness of Mr. B. B. Waller, who has been making an extended tour overseas, we have a glimpse in later pages of the first annual convention of the Australian Gas Institute, which was held in Melbourne in November, under the presidency of Mr. P. C. Holmes Hunt. We welcome the new Institute, and wish it a successful career—to the advantage of the members and of the gas industry generally in Australia. The new organization has been moulded very much on the lines of the parent Institution at home; and there is a marked similarity in the character of its proceedings. Such an organization is a very real necessity in a country such as Australia, where men following the same profession are so widely scattered, and have little opportunity for conference. We see that at this first convention there were about 100 members present. Some of them had to travel 1400 and 1600 miles in order to be there; and they thought it worth while. Such enthusiasm augurs well for the future of the Institute. At this inaugural meeting, there was varied topic for discussion, and interspersed were social functions which helped to make the members better known to each other, established new friendships, and further cemented old ones. We hope to receive for publication a fuller report of the proceedings. Some of the names of those at the convention are well known at home, and not least so is that of Mr. Andrew Wilson, Engineer and Manager of the Australian Gas Company of Sydney, who is the next President.

Experientia Docet.

THERE are several signs outside the crestfallen Executive of the Miners' Federation that the events of last year have produced in labour circles a much-needed enlightenment, which has been followed by repentance on the part of the more sober-minded leaders for having then done something which they ought not to have done. The results of the year's happenings have also convinced them that their methods have not been those which promote the best interests of the workers, but are of a character which not only tends to wreck, but succeeds in wrecking, them. The new position must be approached by all engaged in industry with the knowledge that the failure of the "Reds" will only stimulate them to more vigorous effort, cunning, and concentration. But, on the other hand, the lessons of the year have pulled up the real leaders of the trade union world, have shown them to where their organizations have been drifting, and have braced them up to a determination to defeat the machinations of the Communist element in their midst. That being so, we have a clear direction to the responsible heads of industry to seek to work with those leaders with the view of defeating the insidious operations of the common enemy.

What have the trade union leaders learned? They have seen that when the work of industry is interrupted and thrown from its customary lines, it is difficult to get it back again into normal running and scope, and thus trade is injured and employment reduced. Also, whatever is done by labour which causes costs to ascend, or unproductive outlay to be made, reduces the competitive strength of industry; and the workers share in any loss by having their employment curtailed. When after the events of last year—during which the inter-relations of industry and of employment had such marked attestation—employment could not be found for all the men who legally or illegally left their work, the extremists in the labour world started idiotically to talk of victimization; but the level-headed ones in the same world knew that the deficiency of employment was largely, if not wholly, the fruit of the leaders' own operations. Many trade union leaders have experienced and learned of these things since the general strike. They have been astonished at the amount of unemployment and short-time working that the strike occasioned, with the supplement caused by the tragic seven months' coal stoppage. They have been alarmed at the ramifications of the evil effects among the workers; and they have been badly rattled over the bad

results upon union funds and membership. The visions of one time have disappeared; changes more unpleasantly material have taken their place. This all shows there is something fundamentally and vitally wrong when a policy injures the interests of the workers, instead of maintaining or improving them. The course to pursue to protect and foster those interests is co-operation with industry; and the opportune time to effect a linking-up is now.

The gas industry was not involved to any extent in the general strike. But it suffered with others its inconveniences and losses. Its business, through that strike and the coal stoppage, was affected by the direct effects on other industries and the capacity of the people for spending; and, naturally, this applies more in some districts than in others. But the gas industry generally suffered enormously from the coal stoppage, through the stupendous charges it has had to pay for coal delivered. As a result, increased prices for gas have been necessary; and these have had to be partially paid by the millions of workers in the country to whom gas, through prepayment meters, was the chief source of fuel supply for seven months. On the other hand, the workers in the gas industry enjoyed constant employment throughout the dispute; but the burden upon the consumers of a price of gas higher than it otherwise would have been must remain until the incubus placed upon the industry by the labour operations of last year has been fully removed. The trade unions associated with the gas industry who kept themselves free from the destructive industrial movements of last year served their members well, and also all—millions of workers included— who were dependent upon gas supply for lighting, cooking, and heating.

However, enlightenment has come to many of the leaders regarding the evil effects to the workers of the country of the policy which has been pursued by some of the trade unions; but the experience has been bought at a fabulous price. Industrial workers have been, with the rest of the community, the victims of that policy. Just consider. The miners alone last year must have lost in wages sufficient to have enabled them to buy several collieries; and when their loss of wages in 1926 is added to that of 1921, it may with assurance be said that it would have provided an enormous capital (had it not been required for other purposes) towards obtaining possession of the collieries, instead of striving to transfer possession from the present owners to the nation. The heading to this article may be extended—*Experientia docet stultos*. Supposing the wild men of the Miners' Federation had succeeded in attaining their objective. What would it have profited the miners in the economic circumstances of the coal industry? They can never, through any influence of their 1921 and 1926 strikes, recoup themselves the losses that those events brought directly upon them. The folly of it all has spread itself in vivid colours and material issues before the more intellectual of the leaders of the unions. Their speeches and actions have suggested that the lessons are not going to pass unheeded; and we genuinely believe that they see their responsibilities in a new light. Some of these leaders, however, are not logical in putting up gossamer excuses for what has occurred. We see that the Rt. Hon. Arthur Henderson asked the other day, "Is it surprising that many of the workers have little or no confidence in an industrial order which fails to guarantee them regular employment, or a living wage when they are employed?" The "industrial order" is constituted of many components—among them the workers and economic conditions have place. Unless the workers do their share (as far as is humanly possible) in establishing conditions which will give regular employment and a living wage, what can they expect? When they engage in such wrecking tactics as those witnessed last year, they must share the effects in common with the other components. It is all very well to talk about a "square deal" for the workers; there is also the question of a "square deal" for the whole of the industrial system. There is not the slightest reason why the workers in most industries should not enjoy the system of co-partnership, and take a greater interest and part in the conduct of industry. But hitherto many of the trade unions have objected to this policy—regarding co-partnership, in any shape or form, as something altogether inimical to trade union policy and interests, and merely an artifice to divorce the men from their organizations. The benefits to the men themselves have been ignored, although they have so much reality in undertakings of which readers of the "JOURNAL" have intimate knowledge. But perhaps to-day there is a more friendly feeling towards the co-partnership system on the side of the leaders of the unions. Of this they may be sure—that men who are co-partners will not link-up their fortunes with those of the much, and justly, despised Reds. At any rate, one of the best things that the unions can do of genuine value to their members is to co-operate with industry for the advance of its interests; for therein is the source of improvement of the workers' individual and collective interests. The ways of last year have proved a contrary effect, and in manner too plain for the leaders of the unions to refuse to recognize, though some of them have not the courage publicly to acknowledge it.

"Safety First" in Public Lighting.

IN almost innumerable places, the question of lighting the streets by gas or electricity has for years been a bone of contention, and is likely to be so indefinitely. In a few places, there is no bone of this nature left over which to contend, because the authorities—being the owners of the electricity concern, and in most cases not of the gas undertaking—have abolished gas from the streets, in order to give the load to the electricity department; there is no other reason. Whether the proceeding is a rational one or not, has not disturbed the administrative mind; no other question than the patronage of the municipal supply has been taken into account. They bond municipal possession with the administration of all public service, as though the two were indivisible, and no argument could exist to make them otherwise. It is high time that our civic authorities refused to allow the possession of the electricity supply to debar them from considering the whole of the qualifications necessary for good public lighting.

We are reminded of this matter by reading in an electrical journal a short list of towns which have turned completely to electricity for street lighting; the public lighting authorities, in the bulk of them, being the owners of the electricity undertaking, wherein is seen the disadvantage of such possession. Another reminder of the subject is given by reading a report of a discussion in the Doncaster Town Council, in which members took sides—not altogether on merit. Some of them wanted to override the Watch Committee (to whom are entrusted street-lighting questions), in order to obtain a larger picking from the public service for the Electricity Department. A thoroughfare, known as Scot Lane, has been widened. The Watch Committee recommended that the present system of gas lighting should be retained; but the Electricity Committee had written to the Watch Committee on the subject. What the former said to the latter, we have no notion, but, whatever its nature, it did not alter the views of the Committee. Hence the discussion in the Council. One speaker thought the Electricity Department was entitled to consideration as well as the Gas Department. Another speaker was pained over these disputes regarding gas and electricity; and it was also stated that the gas-lamps were a credit to the Gas Department, and electricity could not beat them. There we have the real ground of controversy in a nutshell. It is not the rationale of the question that matters, but affection or sympathy for the Electricity Department. That is not public administration, which should not be limited in its fundamental consideration. Possession and prejudice should be pushed aside when municipal bodies are discussing which agent to adopt for public lighting. It is good illumination of the streets they want. The agent by which the desire is realized is secondary; but in selecting the agent, certain attributes should be considered. First, there is economy; and the economy should be based not on cut prices for electricity or gas, but on charges which are genuinely beneficial to the supply undertaking. The question of economy, too, should take into account the cost of conversion from one illuminant to another; also whether, by spending on the improvement of the existing system,

it will not be more economical, and as highly efficient, as laying out a heap of money on complete conversion.

More important than economy in street lighting is reliability of the system. Electricity is a notoriously fickle agent for street purposes. Hardly a week passes without news being published of breakdowns of the service. It ought to be made a punishable offence for local authorities to instal a system of public lighting which is not the supreme one in respect of dependability—at any rate, they should be made responsible for any accidents which occur through the installation of a system having inferior reliability to another. Electric lighting failures are known in London, Manchester, Liverpool, and most other places. The shopping centre of Manchester the other day suffered two-and-a-half hours' eclipse of electricity. Efficiency in the worst of weathers is also a further requisite in public lighting; and in this respect gas is second to none. Gas-lamps are easily maintained in a state of efficiency; electric lamps undergo a gradual depreciation until they have to be scrapped. None of these matters are taken into account by municipal bodies, though most important in a piece of public service which claims that "safety first" shall guide. The Doncaster Town Council also discussed the question of the lighting of the streets on the Woodford Lane housing estate, though the Council in Committee had decided not to endorse a proposal that electricity should be used. The matter was left in the hands of the Watch Committee. But whether street lighting be in old roads or on new estates, the same practical considerations should apply, and not the sole one of municipal possession of the electricity undertaking.

Water Heating and Ideal Kitchens.

THERE were many noteworthy points in the address which Mr. W. L. S. Spinks delivered to the Midland Gas Salesmen's Circle last Wednesday, as reported in our "Supplement" to-day. Two of the subjects invite special attention. It is clear the author is not satisfied that sufficient energy is being put by the industry into the exploitation of water heating by gas; and he is certainly of opinion that all is not being done that should be done by the industry in exercising its influence upon the architectural design of the ideal kitchen, as distinct from the heating equipment.

Take first the water-heating question. Much greater progress, Mr. Spinks urges, has to be made in this direction. The field, in his view, is peculiarly the gas industry's own; and he submits that the time has come when the industry (apart from the makers of water-heating apparatus) should launch a real campaign to get the load. Plainly, he is of opinion that, though the field is peculiarly that of the industry, it is not going to enter into possession without real effort. To prevent possession by gas, the electricity industry—in some towns more than in others—are operating very diligently, though reports from the business front tell us that gas and coke water-heaters are gaining an excellent amount of ground. Consideration must, however, be given to the methods that are being applied by the electrical people. They want to attain as near as possible to a twenty-four hour load; and water heating during the hours when people are abed has been fixed upon as a legitimate aid to this desideratum. For this purpose, electricity suppliers are pressing on householders water-storage cisterns containing immersion heaters, and are charging only coal cost per unit, with a little addition, which they term "profit." That is to say, the water heating, per unit of energy consumed, carries little beyond the coal cost; and that little cannot be "profit" while plant and attendants are necessary to generation, mains and meters to the delivery of the energy, rates and taxes have to be paid, and establishment charges have to be defrayed. Expediency and self-deception are in this case close companions. But there we have the lines which have to be met in this competition for business which, Mr. Spinks says, is peculiarly our own. We have to compete on cost, reliability, efficiency, and promptness of service. It tells a good tale on the point of cost that it is considered necessary almost to give away electric current in order to make the water-heating proposition acceptable to householders, and to provide some appearance of competitive rates, as in respect of reliability, efficiency, and prompt service gas cannot be beaten. Mr. Spinks urges more education of sales staffs on the subject of water heating; and they should also be taught the relative values of the varied types of apparatus for different purposes, so as to be in a position properly to advise all who seek recommendation, or to whom they tender it. The point is as important to the gas suppliers and the manufacturers of water-heating appliances as to the users. A suggestion which can be heartily supported is that there should be greater scientific research into water heating by gas, in order that the highest standards of operation may be achieved. Mr. Spinks has obviously got his eye on the elimination, as far as possible, of heat losses; for he says that "precise information as to how heat losses can be reduced to a minimum without too great initial expense is badly needed." We must remember he is speaking with experience in connection with a large Corporation Gas Department. He also suggests that salesmen should be placed in a position to recommend to architects and builders a standard shape of cylinder or tank, with standard connections and standard lagging.

In these matters, there are points that should be carefully considered; for while we know the upper hand in practical water heating is with gas, we see to what lengths our electrical rivals will go on the road to unprofitable business, and yet sophistically claim it is profitable, seeing that it improves the load factor—an improvement which can obviously be purchased too dearly. They are also responsible for the propaganda among architects and builders in favour of the flueless bedroom, and the sacrifice of health conditions on the altar of electric heating. Mr. Spinks points to another innovation in the design of modern types of small houses. It is that the size of the kitchen is often curtailed to box-like dimensions to allow of more imposing apartments that are visible to visitors. The little villa must now have its bijou lounge. The kitchen suffers. The place where the culinary operations proceed is sometimes now constructed without a flue. That is not good for health, or the comfort of the house. When meals are being prepared, there must be steam and the smell of cooking food—whether gas, coal, coke, or electricity is the heating agent. Healthy conditions therefore press the provision of a flue as an absolute necessity. Where there is one, all products and cooking odours can be discharged into it, as well as the products of the wash boiler or water heater. It is submitted by Mr. Spinks that gas undertakings would do well not only to demonstrate how a kitchen should be equipped, but how it should be designed for the preservation of a healthy state. The two things should go together. What modern ideas of house design may provide in the way of more attractive appearance, must not be allowed to degrade wholesome conditions. It is not real economy to save a few pounds in structural costs if, by so doing, health will be impaired, any more than it is to adopt so-called labour-saving appliances, which economize time in the performance of an operation, but demand a greater expenditure of time than that saved in keeping the appliances clean.

We often wonder whether responsible executive officials give time to a study of the proceedings of the Gas Salesmen's Circles, as reported in "THE GAS SALESMAN." We are confident that, if they did, they would frequently come across suggestions which would be valuable in the development of the business side of their undertakings.

Institution Annual Meeting.

We learn from the Secretary of the Institution of Gas Engineers (Mr. W. T. Dunn) that the Council have betimes fixed the date for the next annual general meeting. It will be held in London from June 14 to June 17, under the presidency of Mr. John Wilkinson, O.B.E., Engineer and Manager of the Gas Department of the Nottingham Corporation.

Coal-Selling Organizations.

Not all men who are intimate with the coal trade, either as sellers or buyers, are in favour of the proposals for the formation of coal-selling organizations; and the gas industry, as a large coal buyer, entertains considerable doubt as to the

policy of reducing purchasing scope being a good one. We see that, at a recent meeting of the North-East Coast Coal Exporters' Association, the advice was given to the members by Mr. P. Burnip, the Chairman, that they should not run the risk of forming coal-selling syndicates. In his view, the idea is wrong, as the avowed object is to increase the price of the commodity. We were not aware that was the "avowed object;" and Sir Alfred Mond has denied it. One company of which Mr. Burnip has knowledge has experienced a falling-off in trade since adopting the system; and the Chairman of that concern to-day hopes that their freedom will soon be restored.

Reeson-Moss Liquid Purifying Process.

In later columns we describe to-day the Reeson-Moss liquid purifying process. No actual working data accompany the account; but judging from the available information, the process claims to be highly efficient and economical. A gas-purifying system must be worthy of consideration which can present such a front of advantages as are submitted by the inventors. Here are the main features of the list: Saving in capital expenditure, repairs to plant, labour costs, and space; elimination of loss of gas and time in changing material in purifier boxes; no increase in back-pressure due to fouling of material; recovery of sulphur and cyanogen as saleable products; elimination of nuisance and fire risk, which are apt to be present when oxide purifiers are opened; removal of CS_2 and cyanogen compounds, thereby minimizing the corrosive properties of the gas; and elimination of the risk of foul gas through the sudden exhaustion of purifying material.

Coal Data for 1925.

In view of the coal stoppage and the present position, it is interesting to place on record the following figures taken from the annual report of the Chief Inspector of Mines for 1925. The quantity of saleable coal raised in Great Britain that year was 243,176,231 tons, as compared with 267,118,167 tons in 1924, and 287,430,473 tons in 1913. The figures show what a tremendous loss in output there has been as compared with the complete year preceding the war, despite the greater number of hands employed. The average net selling value at the mines in 1925 is returned at 16s. 4·38d. per ton, compared with 18s. 10·11d. in 1924, and 10s. 2d. in 1913.

Coke and Briquettes.

In another section of the report for 1925 of the Chief Inspector of Mines, details are given respecting the production of coke, the number and types of coke-ovens in use, and the output of briquettes. It is shown that the quantity of gas coke and breeze made during the year was 11,832,842 tons, and the quantity sold 7,396,681 tons, as compared with 12,085,691 tons and 7,419,305 tons respectively in 1924. The value at works of the coke and breeze sold is returned at £8,853,450 and £10,854,517 in the two years respectively. The quantity of coal used in the manufacture of gas in 1925 was 17,798,725 tons, as compared with 18,104,400 tons in the previous year. The coking industry last year carbonized 15,077,113 tons of coal in bye-product ovens; the quantity of coke obtained being 10,200,405 tons. The corresponding totals in 1924 were 17,234,562 tons of coal carbonized, and 11,760,451 tons of coke produced. In 1925, the total number of coke-ovens in use was 10,416, of which 2229 were of the beehive type, and 7891 bye-product ovens, while 296 are described as of "other kinds." In 1924, the number of ovens in use was 12,081, of which 2583 were beehive, 9067 bye-product, and 431 "other kinds." Regarding the manufacture of briquettes, the total quantity made in 1925 was 1,223,454 tons, and in 1924 1,189,518 tons. The value (which represents the selling price at the place of manufacture) in 1925 was £1,439,508; and in 1924, £1,700,495.

Gas Supply during the Coal Stoppage.

In its annual sketch of events in 1926, the "Iron and Coal Trades Review" states that one of the outstanding features during the coal stoppage was the remarkable manner in which public services were maintained. With very few exceptions there was no failure of service. So far as gas and electricity for domestic purposes were concerned, householders experienced very little inconvenience. So far so good; but our contemporary goes on to say: "Admittedly, for quite a long period, the standard of gas supply was far below the normal quality, but for the most part it was quite sufficient to enable the public to carry on." We think the words "long period" and "far below" magnify the actual conditions. From authoritative information, we know that the official testings during the coal stoppage show that there was a very small divergence in the quality of gas; in some cases, none at all. It is true that here and there a temporary reduction of pressure occurred, owing to the shortage of coal. But that was not a general condition; and it did not last a long period. Moreover, our contemporary overlooks the fact that there is very little economy gained by reducing calorific power or pressure, as, under whatever conditions in these respects gas is supplied, the same quantity of heat units must be used for a given amount of work. That elementary fact should safeguard our friends against a too liberal use of imagination as to what actually occurred.

Operation of a Coal Clause.

A coal clause is a condition of many contracts with industrial firms for the supply of gas or electricity. In most cases such clauses are operated in a reasonable spirit. Our contemporary, the "Electrical Review," however, has had a case brought to its notice in which the existence of a coal clause in an agreement for the supply of electricity to a factory has had the disastrous effect of adding more than twice the additional cost of the coal to the monthly bill for energy, and actually doubled the account. Remonstrances, it says, were of no avail—it was in the bond. As it points out, it is one thing to secure fair compensation for exceptional and unavoidable delay, but quite another to make a large profit out of the circumstances. We should have thought that an eye to goodwill in the future would have prevented advantage being taken of the opportunity to make an inordinate profit. In fact, if only the additional cost of coal was taken into account, there ought to be no increase of profit to the electricity supplier.

FORTHCOMING ENGAGEMENTS.

[*Secretaries of Gas and Kindred Organizations are asked to assist in making this diary of events as complete and useful as possible by sending the earliest intimation of all meetings.*]

Jan. 14.—CHEMICAL ENGINEERING GROUP OF THE SOCIETY OF CHEMICAL INDUSTRY.—Meeting at Burlington House, Piccadilly, W. 1. Paper by Mr. J. Ainger Hall, B.Sc., &c., on "Thermo-Electric and Resistance Pyrometry in Industry."

Jan. 15.—LONDON AND SOUTHERN DISTRICT JUNIOR GAS ASSOCIATION.—Visit to the East Greenwich Works of the South Metropolitan Gas Company.

Jan. 15.—SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).—Meeting in the Royal Technical College, Glasgow. Paper by Mr. A. Kay, on "Gas-Fired Hot Water Systems."

Jan. 15.—YORKSHIRE JUNIOR GAS ASSOCIATION.—Meeting.

Jan. 19.—SOUTHERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS (EASTERN DISTRICT).—Meeting at 28, Grosvenor Gardens, S.W. 1, 2.30.

Jan. 20.—MIDLAND JUNIOR GAS ASSOCIATION.—Meeting. Paper by Mr. A. R. Myhill on "Notes on the Operation of Gas Producers."

Jan. 20.—MIDLAND JUNIOR GAS ASSOCIATION.—Meeting in Council House, Birmingham, 6.15.

Jan. 22.—SCOTTISH JUNIOR GAS ASSOCIATION (EASTERN DISTRICT).—Visit to Messrs. R. Laidlaw & Sons, Ltd., Edinburgh.

Jan. 26.—SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).—Visit to the "Glasgow News and Daily Record" Office.

Jan. 28.—LONDON AND SOUTHERN DISTRICT JUNIOR GAS ASSOCIATION.—Meeting at the Westminster Technical Institute. Paper by Mr. A. Hugh Seabrook on "Gas-Works and the Production of Light, Heat, and Power."

Feb. 8.—NATIONAL GAS COUNCIL.—Meeting.

Feb. 8.—FEDERATION OF GAS EMPLOYERS.—Meeting.

Feb. 16.—INSTITUTION OF GAS ENGINEERS AND BRITISH COMMERCIAL GAS ASSOCIATION.—Joint Conference on "The Inspection and Maintenance of Consumers' Appliances," at the Institution of Mechanical Engineers, Storey's Gate, S.W.1.

March 9.—JUNIOR GAS ASSOCIATIONS.—Education Conference.

March 16.—BRITISH COMMERCIAL GAS ASSOCIATION.—Midlands District Conference at Smethwick.

INSTITUTION OF GAS ENGINEERS.

Feb. 8.—Advisory Committee on Education.

Feb. 9.—Emergency Committee, Finance Committee, and Council Meeting.

June 14-17.—Annual General Meeting in London.

PERSONAL.

The Bradford Gas Committee have passed a special resolution to thank Mr. W. DOIG GIBB for "extremely valuable and able assistance so freely rendered by him to the Committee," in connection with the engineering technicalities of the Bradford Corporation's application for an Order under the Gas Regulation Act. The Committee recognize and appreciate the fact that, by Mr. Gibb's assistance, the granting of the Order has been facilitated, and the difficulties of the Committee considerably lightened.

The Rhyl Urban District Council have appointed Mr. O. P. CRONSHAW as their Gas and Water Engineer, to take the place of Mr. L. G. Hall. Mr. Cronshaw is 29 years of age, and at present holds the position of Deputy Engineer of the Accrington District Gas and Water Board, an authority controlling the gas and water supplies over an area of some 25 square miles. He received his education at Blackburn, and holds various first-class certificates. He commenced his training in gas and water engineering under the Accrington Board in January, 1915, and from 1917 to 1919 served with his Majesty's forces. On resuming civil employment, he was appointed Engineering Assistant and Draughtsman under Mr. A. J. Harrison, and was responsible for the preparation of a scheme of reconstruction of the Board's gas-works, the carrying out of which, involving an expenditure of nearly £150,000, he also supervised. Since the completion of this work the rapidly increasing demand for gas has necessitated further additions to plant; and at present Mr. Cronshaw is supervising the erection of a carburetted water gas plant, &c.

At a special meeting of the Manchester City Justices Gas Meter Testing Committee, on Jan. 7, Mr. H. N. BARROW was appointed Chairman of the Committee for the sixth successive year. Mr. Barrow, it will be recalled, is also President of the Association of Statutory Gas Meter Inspectors of Great Britain. Occasion was taken at the meeting to place on record the Committee's appreciation of the work done by Mr. A. WINTERBOTTOM (the Inspector) and his staff during the past twelve months.

Mr. GEORGE S. PURDY, Assistant Secretary of the Langley Mill and Heanor Gas Light and Coke Company, Ltd., has been presented by the employees with a gold albert chain, in recognition of his valuable assistance and interest in the many schemes organized during the past 22 years on their behalf. The Managing Director (Mr. H. J. Andrews), in making the presentation, spoke in high terms of Mr. Purdy's readiness to carry out any undertaking likely to prove beneficial to the employees, and of the good fellowship which had always existed between them. Acknowledging the gift, Mr. Purdy said the present came as a great surprise to him, and he thanked them very much for their kind thought.

Mr. JAMES KNOTT, Accountant to the Sunderland Gas Company, has retired after 57 years' service; and to mark the high esteem in which he is held he has been presented by the staff with a suitably inscribed handsome mahogany Napoleon timepiece with Westminster chimes. Mrs. Knott received an art-silver fruit stand. Mr. Knott was heartily congratulated by his colleagues on his long and faithful service, and the hope was expressed that both he and Mrs. Knott would enjoy good health and happiness for many years to come. Mr. Knott, acknowledging the gifts, spoke of the good feeling existing among all sections of the staff, and warmly acknowledged the many kindnesses he had received from everybody connected with the Company.

Mr. A. N. TARRANT, who has been in charge of the Manchester office of the Woodall-Duckham Companies for some years, is to be transferred to the London office in connection with a new development of the Companies' business; and Mr. A. F. TOPLEY, who is well known in the South as a representative of the Companies, is taking charge of the Manchester office as from the beginning of this week.

Mr. T. HUTCHINSON, who is well known to most engineers in the gas industry, has, after 35 years' service, retired from his position as Secretary to the Whessoe Foundry and Engineering Company, Ltd., of Darlington. We trust he may have long enjoyment of his leisure.

OBITUARY.

Mr. HERBERT BOND HEATH, for many years an official of the Plymouth Gas Company, and for a considerable time the Secretary, died at his residence, Seymour Park Road, Plymouth, on Saturday, Jan. 1, aged 73.

The death has occurred at Mentone, following a chill which developed into pneumonia, of Mr. F. A. SEARLE, a Director of the Bideford Gas Company, at the age of 63.

ELECTRICITY SUPPLY MEMORANDA.

FOR once in a way, the gas and electricity industries are of one mind. The men of both are strongly optimistic regarding business developments during the New Year, and particularly in the region of domestic applications.

Optimistic.

In fact, the electricity industry seems to be largely concentrating upon increasing its day and night loads by the aid of the household. What they are aiming at is to obtain as near as possible a twenty-four-hour load by utilizing the hours of sleep for the supply of energy for heating water by the use of immersion heaters in water storage cisterns, and securing increased demand for cooking and other heating purposes during the hours of daylight. "Electrical Industries," as is its custom at the beginning of each year, has invited the opinions of a number of prominent men in the industry regarding probabilities. A good example is that of Mr. R. W. L. Phillips, the President of the Incorporated Municipal Electrical Association. He points out that the phenomenal increase in connections for domestic supply during the last two years shows no abatement; and it is tolerably safe to prophesy that business in this direction will be still further accelerated in the coming year. Mr. Phillips considers there is justification in assuming there is some definite reason for the "present boom," in view of the fact that public electricity supply has been available for thirty to forty years. He considers the most likely cause is the activity inaugurated in 1924 by the Wembley Exhibition, as it is from that date the boom started, which leads him to the conclusion that advertisement and other propaganda are the great essentials to the expansion of business. The gas industry long since recognized the value of propaganda as a stimulant to expansion; and it can claim that, during the last few years, its rate of increase in domestic connections has been unprecedented. The higher cost of electrical installation and of appliances is, with the expense of maintenance, a serious drawback to the electrical industry. Mr. Phillips points to another cause for a certain amount of anxiety on the part of those administering public electricity supply. Many of the new connections which are now being made comprise very small properties, and are mainly for lighting purposes; and these result in a high capital cost per KW.-H. installed. On this point Mr. Phillips says: "This may tend to the maintenance, or even an increase, of charges at a time when the public has been led to think that a universal reduction will soon be available. It is, therefore, more than ever necessary that undertakings should take all possible steps to increase the consumption per consumer by pushing the use of other domestic appliances." He believes that the combination of interests which has produced universal electrical selling powers for municipal undertakings will result in nothing but good.

In Parliament.

The passing of the Electricity Supply Bill will not relieve Parliament from the consideration of important schemes for electricity generation and distribution during the coming session. A number of proposals are contained in the Private Bills which are to be promoted. The County of London Electric Supply Company seek powers to extend their area of supply by adding to it the county of Essex, and to enter into agreements for the purchase of existing and minor undertakings. The East Anglian Electric Supply Company are aspiring to the inclusion in their area of the counties of Norfolk, Suffolk, and most of Essex. Extensions are also contemplated by the Yorkshire Electric Power Company; and a new Company is to be incorporated—the Wessex Supply Company—for the purpose of generating and supplying electricity in the whole or parts of the counties of Oxford, Buckingham, Berks, Hants, Wilts, and Gloucester. Probably the most important of the great schemes is that of the London and Home Counties Joint Electricity Authority, for the erection of a huge generating station on the banks of the Thames at Chiswick. The historic Duke's Meadows, it is considered, offer the ideal spot for such a station; and the Authority are seeking power compulsorily to purchase the land, which is at present owned by the Chiswick District Council. The Council appear to be generally in favour of the scheme; but in the locality there is a great deal of opposition to it. The promoters anticipate that, if the generating station is allowed, it will become a capital one under this year's Electricity Supply Act. The effect of this eventually would be that undertakings within easy radius whose cost of generation exceeds that at the capital station would have to take supplies from the latter, in order to pass on to consumers the benefits of cheaper production.

Safety First.

Among electrical experts in this country, there is a mass of opinion that, though super-power stations may effect some microscopic fractional saving per unit in generating costs, the economy will be overwhelmed by the increase of distribution costs. The "New England Utility News" ex-

presses the view that, though super-power development does not mean lower rates, it does guarantee service. We are not altogether positive on that point. One of the theories in this country is that the super-power station will eliminate much stand-by plant; in other words, the surplus stand-by plant which at present exists will, in the super-power station, be reduced considerably, in relation to the demand for current. In proportion to the increase of the demand for current and the reduction of stand-by plant, there will be so much less security for the consumers and the areas served. Then, assuming an accident at a station which cripples more than one set, there will be a good chance of extensive areas and the operations of industrial establishments being affected. With electricity, there is greater general safety in numbers of generating plants than in concentration. In war time a few well-placed bombs on super-stations in areas in which are establishments of prime importance for munition purposes, concentration of electricity generation might prove disastrous to victory. Industry generally requires the utmost assurance of continuity of supply; and the greatest assurance is in private plants. It is suggested that the inter-connection of the stations will obviate disaster in industrial areas. If stand-by plant is to be reduced, we are somewhat dubious regarding this. In industrial regions, peak demands usually synchronize; and it may be impossible for one station to oblige to the extent desired by another which has been crippled. Our American friends (as most electrical experts here) are of opinion that the public expect too much in the immediate future from super-power development. The New England Bureau of Public Service Information deliberately assert that "the cases are few indeed where the establishment of an inter-connection is followed by a rate reduction." It seems to us that the ultimate cost to the consumers will not be lightened in the industrial areas by generation concentration; and that supply safety will not be improved.

Electrical Trials of a Housewife.

Mrs. May M. Cramp is favourable to electrical operation; but why, it is difficult to see. In an article in the "Electrical Review," on "The Trials of a Housewife, due to the Trials of Electricity," she is wholesomely frank. She wants more electrical labour-saving appliances; but she is continually faced with a number of difficulties—partly technical and partly commercial. To begin with the meter, the dials are too small; and it is usually fixed in a dark and inaccessible place. She has a tilt at the fuseboard and the circuit wiring. The latter once led to a serious outbreak of fire in the nursery floor of her house. The steel tube case had been laid near a pipe supplying a gas-fire. The earthing of the tubing was evidently faulty. A leakage of current occurred; the gas-pipe was melted; and the escaping gas was set on fire. Fortunately, this was detected; and the gas was turned off at the meter. She has recently seen houses in which the wires are being laid in the same dangerous manner. Do not the rules of the Institution of Electrical Engineers touch this? If not, why not? Why do not the Insurance Offices move in preventing this state of things. Flimsy switches and faulty lamp holders have also caused much anxiety. On more than one occasion, a short circuit has taken place at the point where the flexible enters the laundry iron. The heating unit of Mrs. Cramp's iron burnt out. She sent it to the makers for repair; and it was six weeks before she received it again. She had a four-lamp radiator. One lamp broke; the makers are not producing more lamps of that type! The wire spiral element of a circular radiator burnt out; it was a month before a new element could be obtained, and then it was ¼ in. too large for the recess provided for it. Then she finds that, however attractive radiators may look when new, they soon get an appearance of "shabby finery." Electrical fittings generally are not robust enough to withstand ordinary household usage. Mrs. Cramp would like to have an electric cooker and an electric heater for water. But she would have to pay about £30 to have a larger cable; and no tariff is provided in her district which would enable her to afford an electric water-heater. While Mrs. Cramp is "heartily in favour" of an all-electric house, she does not think it is likely to be reached until some of the troubles to which she has referred have been eliminated. Comparing her gas experiences with those of electricity, she says she has never been charged for the laying of a gas supply. It is also easy to acquire gas apparatus at a reasonable price, and on the hire system. Although electrical authorities are beginning to supply apparatus on easy terms, the prices are higher than for the corresponding articles using gas or oil. She thinks most women find that an electrical installation is a kind of "dark horse." With gas, if anything is wrong, they can smell it, and know that the gas must be turned-off at the meter, and no lights be applied. She adds: "Would that electricity could give us some such warning!" Although there is disagreement (having regard to economy and reliability) with Mrs. Cramp as to the desirability of an all-electric house, it must be acknowledged that there is much common sense running through her article. There are also several points over which electrical men may well ponder, because the critic's desire to have things bettered electrically will not reduce the ground of complaint regarding expense.

Electric Slot Meters in Sheffield.

In a recent issue of the "Trade Supplement" of the "Sheffield Daily Telegraph," some information was given concerning the progress of the Corporation Electricity Department. In it a feature was made of the slot meter system, and of its use in bringing electricity for lighting purposes within the scope of consumers who could not previously afford the cost of installation. It appears that the department have now 36,754 consumers, as compared with 22,922 at the end of 1925—an increase of 13,832. It is remarked, however, that a considerable number of these relate to installations in the smallest type of dwellings connected and wired under the slot meter prepayment system. It is also mentioned that, when 300 units of electricity have been paid for, the consumer is deemed to have paid not only for his current, but for his installation, which then becomes his property. Under this method, no less than 8447 applications have been received. When the consumer enters into possession of the installation, he becomes responsible for its maintenance.

Electricity Failures an Aid to Shoplifting.

The Piccadilly district of Manchester was in darkness for two-and-a-half hours on Monday evening of last week. The shops were extremely busy owing to its being the first day of the "sales." At the time they were filled mostly with ladies; and on the extinction of the lights, a general rush was made for the exits of the shops. Some of the shopkeepers tried to carry on by the aid of improvised illumination—candles and lamps—but this was not very successful, and a vigilant eye had necessarily to be kept on stocks. Indeed, it is alleged in one report that many articles were stolen from the counters. Although a big effort was made to carry on, it was found impossible; and business had to close down within half-an-hour of the failure of the supply. According to the "Manchester Guardian," "many hours elapsed without the cause of the failure being discovered."

Accidents.

A ganger, named Thomas Hester, was electrocuted a few days since through plunging a crowbar into a temporary electric cable which is being used in connection with the building of a new Albert Bridge over the Thames between Old Windsor and Datchet. The cable was laid overground; but it is assumed that rats and birds had scraped the earth away from an adjoining bank, and this had hidden the cable. Hester was engaged in moving timber, and jammed his crowbar into the ground. A verdict of "Accidental death" was returned at the inquest. Just before Christmas, a pumpman, named William Alderson, employed at the West Auckland Colliery of Messrs. Bolckow, Vaughan, & Co., was electrocuted. He was found lying in the Brockwell seam against a lighting cable carrying current at 110 volts. Artificial respiration was tried for nearly an hour, but without avail. The unfortunate man had worked as a safety man in the seam during the whole of the coal stoppage.

Waste Gas for Electricity Generation.

The Staveley Coal and Iron Company are constructing a second large gas-engine for the generation of electricity by the utilization of waste heat from their coke-ovens. A similar engine which they installed last year is giving every satisfaction; and the scheme contemplates the erection of a third engine. The Company own three generating stations; and, besides supplying their collieries and works, they provide current for the lighting of several villages, including Staveley, Brimington, Clowne, and Eckington. The Chesterfield Corporation also take from them a bulk supply.

New British Standard Specifications.—The British Engineering Standards Association have issued five new British Standard Specifications for red oxides of iron for paints, zinc oxide oil paste for paints, white lead and tinted white lead ready-mixed paint, and extra hard drying varnish. They contain clauses regulating the composition, together with standard reception tests, for the purchase of these materials together with appendixes giving methods of carrying out the tests. These specifications have been prepared at the request of the paint manufacturers by a Committee representative of both buying and manufacturing interests; and as in the case of all British Standard Specifications, they will be reviewed as experience of their working or progress in the industry renders it necessary. Revised issues will be published from time to time. Copies of these five new specifications (Nos. 261, 262, 272, 273, and 274—1926) can be obtained from the B.E.S.A. Publications Department, 28, Victoria Street, price 2s. 2d. each, post free.

THE NEW RATING ACT.

By ARTHUR VALON, M.Inst.C.E.

On April 1 this year the Rating and Valuation Act, 1925, will come into force, sweeping away the Parochial Assessments Act, 1836, and the Union Assessment Committee Act, 1862, with the organization and procedure with which we have been familiar for so long. The overseers first appointed in the reign of Elizabeth by the Poor Relief Act, 1601, disappear; and their duties are transferred to a new "Rating Authority, which, in a county borough, is to be the council of that borough, and, in an urban or rural district, the council of the district." The poor rate is no longer to be levied as a distinct rate, but is to be included in a general rate, which will also cover all other rates that a rating authority may have power to make.

The first new valuation list will come into force on either April 1, 1928, or the same day in 1929; and a second new list is to be prepared so as to come into force on April 1, 1932, 1933, or 1934. After this second list, further new lists are to be made at intervals of five years—the same interval between new lists as in the Metropolis at the present time. The alternative dates allowed for the second list will tend to prevent the difficulties that would ensue if new lists all over the country had to be prepared in the same year. As soon as the valuation list has been prepared, a copy is to be sent to the Assessment Committee, who, after hearing any objections and making any consequent amendments, are to approve the list not later than Jan. 31 if the list is to come into force in April, or July 31 if in October. The latter provision is to meet cases where the Minister of Health has, in accordance with the powers given him by the new Act, altered the interval between lists by six months.

There is to be an Assessment Committee for each assessment area; the latter being either a county borough or one or more rating areas combined together under a scheme prepared by the County Council and approved by the Minister of Health. In the case of a county borough, the Assessment Committee will be appointed by the council—boards of guardians of unions wholly or partly within the area having the right to appoint a quarter of the members—and one-fifth of the members must be persons who are members neither of the council nor of the guardians. In other assessment areas, the Committee is to consist of persons appointed by the rating authorities, boards of guardians, and county councils within the area; the proportions being prescribed in the adopted scheme.

There is also to be a County Valuation Committee, appointed by the county council, with, in addition, one representative from each assessment area. The duty of this Committee is to promote uniformity in the principles and practice of valuation, and to assist rating authorities and assessment committees to carry out their work; and for this purpose they are empowered to hold conferences either alone or with other County Valuation Committees.

In addition to all these authorities, a Central Valuation Committee is to be constituted by the Minister of Health to consider the operation of the Act, and to make any representations to the Minister they may consider desirable for promoting uniformity and removing inequalities in the system of valuation.

To return to the valuation list. When this has been prepared, the rating authority deposit it at their offices, and publish notice of the deposit, stating the date at which, and the mode in which, objections may be made. If any property has not been previously assessed, or if the assessment has been increased, notice must be sent to the occupier. The list is to remain open for inspection for twenty-one days, and is then sent to the Assessment Committee, who hear objections. Fourteen days' notice of the date fixed for the hearing must be given to the objector. It is interesting to observe that no party to the objection, witness in the case, or valuer employed by the Committee may be present while the decision is being considered.

The right of appeal to Quarter Sessions has been preserved; any person who appeared before the Assessment Committee on an objection having the right to appeal against the decision. It is provided that the powers of Quarter Sessions with respect to appeals under the Act shall be delegated to a Committee of Justices, who may sit on any convenient date, whether Quarter Sessions is or is not in session for other purposes. This should be a great improvement, and obviate the great waste of time often caused by the present practice.

So far as the principles and practice of valuation as applied to gas-works are concerned, these remain unaltered, unless the wording of sub-section 1 (*b*) of clause 22 may be considered an alteration. All that this sub-clause does is to direct that the rent shall be estimated on the assumption that the tenant bears the cost of the repairs, insurance, and other expenses (if any) necessary to maintain the hereditament in a state to command that rent—thus placing upon the tenant what has hitherto been treated as a landlord's expense. The final result leaves the rateable value where it was, but eliminates the gross estimated rental, and so abolishes that last refuge of the destitute—and not unamusing method of dishing an opponent—the acceptance of the gross value, and then arguing the deductions necessary to be made to arrive at the rateable value.

Under section 24, machinery and plant used in trade processes, and not in the nature of a building or structure, is in general excluded from valuation as part of the hereditament; but gas undertakings will derive no advantage from this provision, as, in their case, the value is ascertained by reference to the accounts, receipts, or profits of the undertaking carried on, and such hereditaments are expressly excluded from the benefits conferred by the clause. Although it is easy to see the practical difficulties in the way of applying this principle to such undertakings, there is surely nothing to be said for withholding an exemption from a class of undertaking which includes those public utility undertakings in which any reduction in costs is almost inevitably passed on to the consumer.

The foregoing is necessarily only a bare outline of an Act which, with the schedules, runs to over ninety pages, and is intended only to give a general idea of the changes made by the measure. In my little book on the "Rating of Gas and Water Undertakings," published in 1912, was included an outline of general procedure, including that necessary on objection and appeal. It has been suggested to me that a similar outline of the new procedure would be useful; and, if time permits, I shall hope to give this on a future occasion.

AUSTRALIAN GAS INSTITUTE.

On the day that the Duke and Duchess of York sailed for Australia, we received news from the Ex-Chairman of the Council of the Society of British Gas Industries, Mr. B. B. Waller (of Messrs. George Waller & Son, Ltd.), from Sydney, under date Nov. 29. Mr. Waller has been making an extended tour overseas with his wife. He was in Montreal at the time of the Canadian Gas Convention in that city in July, which event was held under the Presidency of Major Humphries. He has since visited most of the Canadian cities, and crossed from Vancouver to Japan, where he had an opportunity of inspecting the principal gas-works. From there he went to Shanghai and Hong Kong, and then proceeded to Australia. He purposed sailing on Dec. 2 for New Zealand, and leaving there on Dec. 21 for the return journey via Vancouver and New York. After a brief stay in the United States, he expects to reach home on Jan. 21.

FIRST ANNUAL CONVENTION OF THE INSTITUTE.

On the invitation of the President of the Australian Gas Institute, Mr. P. C. Holmes Hunt, it was Mr. Waller's good fortune to be able to attend the first annual convention, which was held in Melbourne from Nov. 16 to 18. The programme (which Mr. Waller sends) was a very attractive one, combining much interesting technical subject-matter with attractive social events. In addition to the Presidential Address, there was a paper by Mr. R. G. Evans, of Melbourne, on "Methods of American Gas Undertakings," and another by Mr. A. W. Wright, of Sydney, on "Some of the Present-Day Difficulties of Small Undertakings;" while Mr. S. Westall Durkin, of Adelaide, dealt with the subject of "Carbonization and Calorific Values." Mr. A. E. Hutchison, of Sydney, treated of the "Problem of Industrial Relations," and Mr. G. F. Hurst, of Adelaide, made a contribution on "Gas Heated Industrial Appliances." The "Question Box" was also a feature of the proceedings. It will be seen from the foregoing list that the technical work of the convention was good and varied. Among other fixtures was a visit to the Footscray Works of the Colonial Gas Association, who were the hosts at afternoon tea on the second day of the convention. To celebrate the occasion of the first convention of the Institute, the President invited the whole of the members to participate in a theatre party at His Majesty's Theatre.

Commenting upon the proceedings, Mr. Waller says the attendance book was signed by nearly 100, and included members from Cairns to Perth—about 1400 to 1600 miles distant respectively. This shows great enthusiasm. The Presidential Address was excellent, and covered in an able manner a wide range of subjects. The information given as to the extraordinarily rapid growth of the principal undertakings was striking—the increase in gas output in the Commonwealth during the last twenty years having been about 400 p.ct. The papers, although brief, were of an unusually high order of merit, and evoked admirable discussions.

The visit to the Footscray Gas-Works, notwithstanding indifferent weather, was most popular. The works have recently been reconstructed, and are a model of up-to-date

layout in every detail, with some novel features of interest. Mr. Waller enclosed with his letter a few snapshots which he took on the occasion.

On the first day of the meeting there was a luncheon at the Hotel Windsor, at which about 100 members and visitors were present. After the toast of "The King," that of "The Guests" was proposed by the President and seconded by Mr. A. Wilson—responses being made by Prof. Rivett, of the Melbourne University, the Hon. George Swinburn, and Mr. Waller. The toast of "The President" was proposed by Mr. Andrew Wilson. The veteran Chairman of the Metropolitan Gas Company was unable to be present; but Mr. Waller had the pleasure of taking tea with him later.

The theatre party numbered about 90, and the performance of "Katja" was greatly appreciated.

At the close of the session on the Thursday, Mr. Andrew Wilson (Engineer and Manager of the Australian Gas Light Company, of Sydney) took the chair as the new President, and presented to the retiring President (Mr. Holmes Hunt) a solid silver coffee service subscribed for by the members as a memento of the foundation of the Institute. On the Friday morning many of the visitors inspected the West Melbourne Works of the Metropolitan Gas Company, and also their Fitzroy Works and the electrically welded holders, which work, as our readers well know, was initiated and carried out by the Company's Chief Engineer, Mr. J. N. Reeson.

Mr. Waller concludes his notes on the meeting by saying: The Institute is fortunate in having Mr. Harrison as its General Secretary. His energy, organizing ability, and cheery temperament assisted materially in the success of the Melbourne meeting, which augurs well for the future of the organization. The next meeting is to be held at Sydney.

FOOTSCRAY WORKS.

The following information regarding the Footscray Works and their reconstruction was given in a brochure distributed among the visitors.

The amalgamation of the interests of the Williamstown Gas Company, Ltd., with the Colonial Gas Association, Ltd., which took place in 1924, provided the opening, as well as the immediate necessity, for the concentration of gas manufacture at one works. The prospects, too, of soon securing the privilege of supplying the fast-growing town of Sunshine was a further factor of importance in influencing the decision in favour of one works supplying the whole three districts. At the present time the population of these districts would agregate 80,000 people and, although the growth of Sunshine and Williamstown has been appreciable, there has not been the same marked development in these areas as in Footscray, which over the last ten years, it is believed, shows the greatest growth of any municipality in Victoria. Gas consumers supplied from the Footscray Works now number over 11,000 of whom more than 6500 are located within the city of Footscray and 4500 within the city of Williamstown. The reticulation of Sunshine has not yet been commenced, although a high-pressure main to that suburb is in course of being laid.

In order to cope with the extra burden to be imposed by this concentration of manufacture on one site, the Directors recognized that the Footscray Works would require complete reconstruction; and a plan to place the works on a high plane of efficiency was therefore drawn up. A contract for new carbonizing plant was placed with West's Gas Improvement Company, and on Sept. 27, 1925, work on the foundations of the vertical retort house was commenced. The whole of the reconstruction was completed and gas manufacture commenced on June 7, 1926.

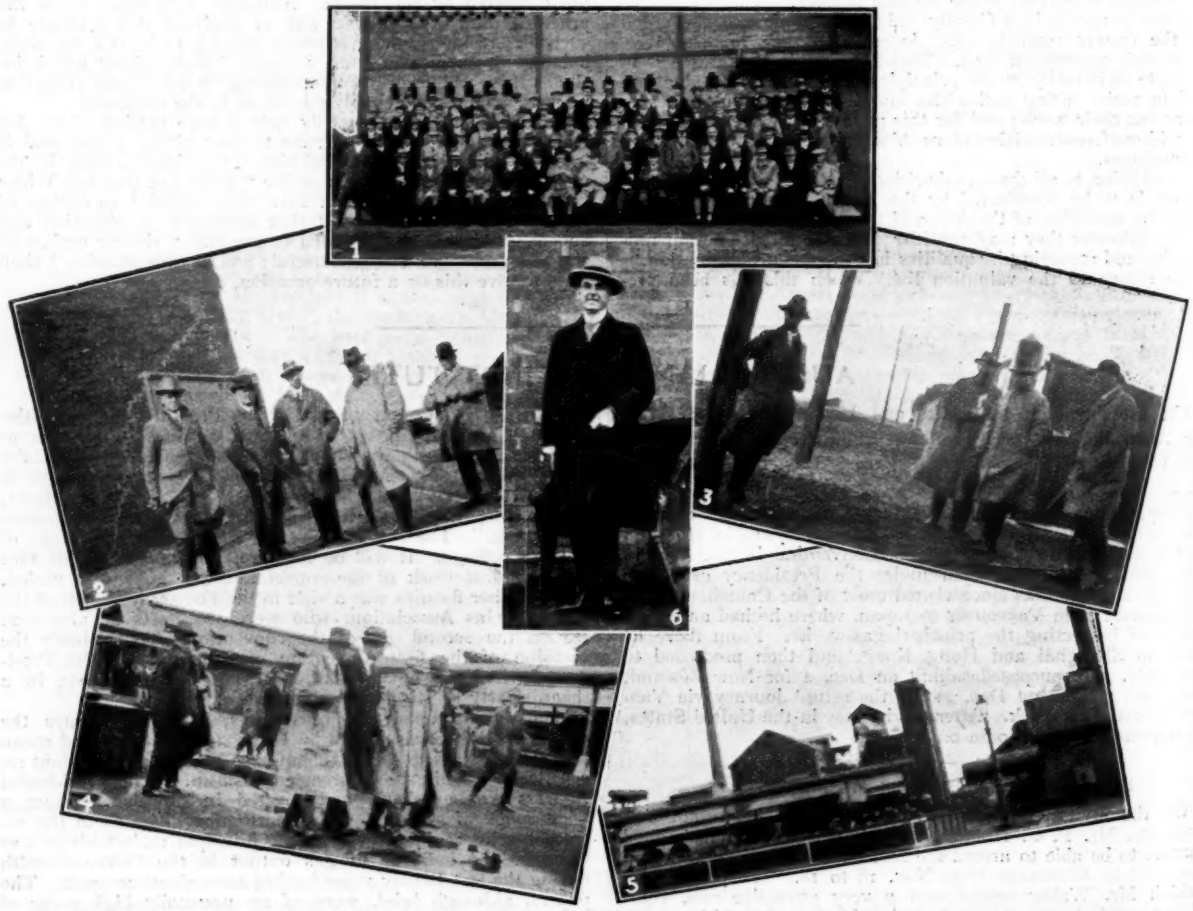
Railway Siding.—Coal is delivered *ex* the steamers into railway wagons at Williamstown, and is then railed to the Association's works siding, which runs parallel to the coal store. The works siding has accommodation for fifteen trucks.

Coal Handling.—The transporter grab, which is electrically operated, spans the whole width of the coal store, and enables the coal to be discharged at any point over its entire length. This unit is capable of discharging from trucks 35 tons of large coal per hour, and also provides for the transfer of coal from the store to the crushing plant when no coal is being received by rail.

Coal Store.—This is constructed of reinforced concrete throughout, and is 4 ft. below the ground line; its two retaining walls being designed to carry the coal transporter track. The store is 210 ft. long and 72 ft. wide, and has a storage capacity of 7000 tons.

Coal Crusher.—This is situated in a reinforced concrete pit, directly beneath the railway tracks, thus enabling coal to be discharged direct from the railway trucks to the coal bunkers during actual delivery. The crusher, which is of the double roll type, is driven by a 20 H.P. electric motor, to which is fitted the Jones patent safety device.

Coal Elevator and Conveyor.—The coal elevator, of the ordinary bucket type, delivers the coal into the top side of the



1. The Members. 2. Arriving at Footscray. Left to Right—Mr. Smedley, Secretary, Manley Gas Company; Mr. Weir, Director, Colonial Gas Association; Mr. Broadhead, of the Metropolitan Gas Company, Melbourne; the President, Mr. P. C. Holmes Hunt; Mr. Bird, West's Gas Improvement Company. 3. Mr. Parsons, Engineer, Footscray; Mr. Hunt; Mr. A. Wilson, Secretary and General Manager, Sydney. 4. Footscray Gas-Works. 5. Inspecting the Works. 6. Mr. Harrison, General Secretary, Australian Gas Institute.

West lip bucket conveyor, which in turn discharges over the coal bunkers in the retort house, and on the return passes under the retorts to pick up the coke and discharge it over the grizzly bar screens into the steel coke bunkers, which have a storage capacity of 150 tons of coke and 75 tons of breeze.

Vertical Retort House and Carbonizing Plant (Glover-West System).—The housing is the usual steel frame structure, with 4½-in. brick panelling. The carbonizing plant consists of three beds, each of eight retorts of the Leigh type, having specially designed chambers at the bottom for steaming. Provision has also been made for a fourth bed by arranging a skeleton setting. The present capacity of the plant is 1,500,000 c.ft. per day.

Condensers.—These are of the Tindale patent type, and are specially designed to maintain a fairly constant high velocity of the gas. The tubes are zinc-sprayed on the outside to permit of salt (river) water being used. This unit is capable of dealing with 1,000,000 c.ft. of crude gas a day.

Steam Raising Plant.—This consists of two dish-ended Lancashire boilers of the latest Thompson-Wolverhampton design, fitted with Wilton's patent furnaces; the total evaporative capacity being 19,000 lbs. of water per hour.

Exhausters.—There are two Waller steam driven sets, each capable of dealing with 50,000 c.ft. per hour.

Boosting Units.—The following are also housed in the engine room: One 30,000 c.ft. per hour Bryan Donkin steam driven set. One 30,000 c.ft. Bryan Donkin gas engine driven set. One 100,000 c.ft. Waller steam driven set. One 100,000 c.ft. crankless gas engine driven set. These units, which are in duplicate, deal with the high-pressure distribution requirements for the outer Footscray-Williamstown areas.

Electric Power.—All of the new power units are electrically driven; the electric current being supplied by the local municipality at 6600 volts to the Association's sub-station, where it is transformed to 400 volts. The switchboard in the engine room controls the whole of the various units.

Washers and Scrubbers.—There are two Livesey washers, which are worked in parallel, and one rotary scrubber.

Purifiers.—There are four boxes, each 25 ft. by 25 ft. by 6 ft. deep; the fourth box being a catch box. The whole unit is connected with Milbourne's patent valves, arranged to permit of changing the flow of the gas in Nos. 1, 2, and 3 boxes.

Station Meter.—50,000 c.ft. per hour capacity.

Gasholders.—No. 1 (two-lift) 500,000 c.ft. capacity; No. 2 (two-lift) 250,000 c.ft. capacity. No. 1 holder was erected in 1925; the whole of the sheeting being of Staffordshire puddled iron. Provision has been made, by weighting the inner lift, to give 60 tenths when the holder is working on the single lift.

GAS BILLS FOR 1927.

Notice has been published of the intention to promote in the 1927 session of Parliament some fifteen Bills which contain clauses having reference to gas undertakings.

BIRMINGHAM CORPORATION.

The City of Birmingham are desirous of extending their boundaries so as to include the urban district of Perry Barr, and the Bill is to secure the enactment of all necessary provisions to this end—including the alteration of the boundary between the county of Warwick and the county of Stafford, so that the city shall be wholly situate in the county of Warwick.

[*Parliamentary Agents: Messrs. Sharpe, Pritchard, & Co.*]

BOGNOR GAS LIGHT AND COKE COMPANY.

The Bognor Gas Light and Coke Company were incorporated by an Act of 1908, and under that Act and another passed in 1912 are empowered to supply gas and electricity within certain limits, which they are now wishful should be extended. So far as gas is concerned, the proposal is that the area should be extended to include the parish of Middleton and the parish of Climping. To enable this to come about, section 4 of the Littlehampton Gas Act, 1909, shall be read as if the parish of Climping had not been included within the limits of that Act, and from and after the passing of the present Bill all the powers and obligations of the Littlehampton Gas Company with reference to the supply of gas otherwise than in bulk within this parish shall cease. The Bognor Company ask for power to charge for gas supplied within the parish of Middleton a price exceeding by not more than 0·6d. per therm that at the same time charged by them for a supply in like circumstances and for similar purposes within the urban district of Bognor. Within the parish of Climping, the price is not to exceed by more than 1·2d. per therm the Bognor price. The Company ask for authority to specify sizes and material of consumers' pipes and fittings, and to supply or take gas in bulk. The extended limits for the supply of electricity it is desired should include, among other parts, the borough of Arundel. Of a total authorized capital of £104,700, there has been issued £77,600, which, with premiums received (less discounts), leaves £26,200 remaining to be issued. There have been borrowed on mortgage and debenture sums aggregating £39,250. The Company now seek authority to raise additional capital not exceeding in the whole £150,000 in ordinary stock, new consolidated stock, or preference shares; but they "shall not issue any share of less nominal value than £10." The standard dividend on the ordinary stock is to be 5 p.ct., and the dividends on the new consolidated stock and the preference shares are not to exceed 7 p.ct. and 6 p.ct. respectively. The borrowing powers are to be one-half of the capital issued after the passing of the Act, and power is taken to issue redeemable preference shares and debenture stock, and to appoint a managing director or managing directors. A maximum charge of 2s. is named for special meter readings to suit the convenience of consumers. It is suggested that the Company's name be altered to the Bognor Gas and Electricity Company.

[*Parliamentary Agents: Messrs. Dyson, Bell, & Co.*]

COMMERCIAL GAS COMPANY.

A full notice of the Bill of the Commercial Gas Company—which is largely to prescribe a basic price and a basic rate of dividend and to permit of the appointment of Employee Directors—will be found on p. 34 of last week's "JOURNAL."

[*Parliamentary Agents: Messrs. Sherwood & Co.*]

COVENTRY CORPORATION.

There are 142 sections in a General Bill to be promoted by the Coventry Corporation; and of these 30 relate to gas. In September last the Corporation agreed with the Kenilworth Gas Company to purchase the undertaking of the latter for the sum of £38,500; and the Bill is to make the agreement binding upon the parties. The date of transfer is to be one month after the passing of the Act, and the agreement sets out that if for any reason the purchase is not completed on the day of transfer, the Corporation shall nevertheless take possession of the undertaking, and (unless the delay is caused through the Company's wilful default) shall pay the Company interest at 6 p.ct. until the actual date of completion. Every person (other than Mr. Ramsden, the Company's Engineer) who on the day of transfer is in the Company's employment shall be taken over by the Corporation on the same basis as to position and emoluments as existed on Sept. 30 last, unless any such employee fourteen days before the date of transfer notifies the Corporation in writing that he does not desire to serve under them. The Company are not to increase the salary or wages of any employee, or alter the terms of his service, between the date of the agreement and the day of transfer, except with the written consent of the Corporation. In addition to the area of the Kenilworth Gas Company, the Corporation seek power to extend their limits of supply so as to include the parishes of Corley and Fillongley, in the rural district of Meriden; the parish of Baginton, in the rural district of Warwick; the urban district of Bulkington; the parishes of Anstey Shilton and Willenhall, in the rural district of Foleshill; and the parishes of Brandon and Bretford, Combefields, Ryton-on-Dunsmore, and Walston, in the rural district of Rugby.

The price to be charged by the Corporation for gas supplied by them within the city and the parish of Foleshill shall not at any time exceed 1s. 2d. per therm; and the price within the remaining parts of the gas limits, other than in the Kenilworth area, shall not exceed by more than 2·4d. per therm the price charged within the city in like circumstances. The price for gas supplied by ordinary meter in the Kenilworth district shall not at any time: (*a*) Within the urban district of Kenilworth and within a radius of 2 miles from the north-eastern corner of the lands secondly described in the first schedule to the Kenilworth Gas Act, 1917, exceed 16·4d. per therm, and (*b*) beyond the urban district and radius exceed by more than 2d. per therm, the price for the time being charged by the Corporation within the urban district and radius. Charges for prepayment meters in the Kenilworth district are to be: With fittings and cooker, 3·6d. per therm; with fittings but no cooker, 3d. per therm; and for hire of prepayment meter only, 1·8d. per therm or 10 p.ct. on the cost of the meter, whichever be the higher. The quality of the gas in the limits other than the Kenilworth district is to be a calorific value of not less than 480 B.Th.U., and in the Kenilworth district 400 B.Th.U. The sections of the Bill referred to in this paragraph shall come into operation, so far as they affect the gas limits other than the Kenilworth district, from and after the final reading of the consumers' meters in the quarter ending March 31, 1928, and for the Kenilworth district shall come into operation on the day of transfer.

Sections 46 and 47 are in the following terms:

> *Register of Prepayment Meter to be Prima Facie Evidence.*—The register of the meter for measuring gas passing through a prepayment meter shall be prima facie evidence of the quantity of gas consumed, and in respect of which any gas rent is charged and sought to be recovered by the Corporation: Provided that if the Corporation and the consumer differ as to

the quantity consumed, such difference shall be determined, upon the application of either party, by a Court of Summary Jurisdiction, who may also order by which of the parties any costs of the proceedings before them shall be paid; and the decision of the Court shall be final and binding on all parties.

Guarantees by Local Authorities in Gas Limits.—(1) Any urban or rural district council within the gas limits may give and enter into a guarantee or contract for securing payment to the Corporation of such periodical or other sum or sums of money, at such time or times, in such manner and subject to such stipulations, as may be agreed by and between such council and the Corporation for the purpose of, or with respect to, the providing or laying down by the Corporation of any pipes or works for the supply of gas within any part of the district of such council which is within the gas limits. (2) The giving of such guarantee and the performance of any contract in relation thereto shall be deemed to be a purpose for which under the provisions of any General Act relating to the powers of such council they may incur expenditure; and any such council may raise any money which may become payable to the Corporation under this section in like manner as money may be raised under the provisions of any such General Act.

The Corporation ask for authority to borrow in connection with the purchase of the undertaking of the Kenilworth Gas Company £39,000, with a period of repayment of thirty years. Another financial section is to enable them, subject to provisions laid down as to due notice, &c., within three months after the passing of the Bill, to cancel any unclaimed gas certificates which were issued or issuable by the Corporation under their Gas Purchase Act of 1884 to shareholders in the Coventry Gas Company.

[*Parliamentary Agents: Messrs. Sharpe, Pritchard, & Co.*]

Farnham Gas and Electricity Company.

This is a Bill to empower the Farnham Gas and Electricity Company to raise further money, and to confer additional powers upon them. There are provisions as to entry upon premises, which are in the following terms:

The power to enter premises in order to inspect meters, fittings, and works for the supply of gas and for the purpose of ascertaining the quantity of gas consumed or supplied conferred upon the Company by section 21 of the Gas-Works Clauses Act, 1871, shall extend to premises in which there is any service pipe connected with the gas mains of the Company, except where the occupier of the premises shall have applied in writing to the Company for the disconnection of the service pipe from the mains of the Company.

Any person having control of premises supplied with gas or electricity by the Company which the Company are from time to time authorized to enter who does not permit such entry shall be liable to a penalty not exceeding £5, and to a daily penalty not exceeding 40s.

Where any premises supplied with gas or electricity by the Company, which the Company are from time to time authorized to enter are unoccupied, the Company, after giving not less than 48 hours' notice to the owner thereof, or (if he is unknown to the Company, and cannot after diligent inquiry be ascertained) after affixing such notice upon a conspicuous part of the premises, may forcibly enter the same, doing no unnecessary damage.

There is a section to enable them to supply gas or electricity to premises partly outside the limits or area of supply:

The Company may by agreement supply gas or electricity to any house or building which, or the curtilage of which, is partly within and partly outside the limits of supply or the area of supply, as the case may be, in the same manner as if such premises were wholly within such limits or area respectively.

There are provisions for the application of excess profits over authorized rates of dividend, in similar terms to those in the Brighton Special Order quoted elsewhere in this issue of the "JOURNAL;" and also for the sale of stock to consumers or persons in the employ of the Company, at the then value thereof, or the offer of it for subscription by the public. The value of any shares or stock at the date of the offer thereof to any consumer or employee shall be deemed to be the average price at which, according to the Company's books, sales of shares or stock of the same class were effected within the period of six months immediately preceding the date on which the value is required to be determined; or if there has been only one sale or no sale during this period, then the price at which the last sale was effected, making due allowance for any probable change in value since such date due to the accrual or payment of dividend or any other cause. Power is asked to raise £70,000 of additional capital; the preference capital to be entitled to a dividend not exceeding 7 p.ct. Borrowing powers to the extent of one-half of the capital to be raised are desired. Without the consent respectively of the Board of Trade or the Electricity Commissioners, the Company shall not pay interest at a higher rate than 6 p.ct. on money so borrowed. The preference shares or debenture stock may be redeemable. Authority is sought to appoint a managing director. A judge of any Court or a Justice shall not be disqualified from acting in the execution of any Act or Order from time to time relating to the Company by reason of his being liable to any rate.

[*Parliamentary Agents: Messrs. Sherwood & Co.*]

(*To be continued.*)

GAS SUPPLIES OF CANADA.

A Great Natural Resource.

In those areas of Canada where natural gas is available, its low cost as compared with coal or with manufactured gas, and its great convenience, have, according to information received from the High Commissioner for Canada in London, led to its general use, not only for domestic cooking, but for house and block heating and for industrial purposes.

Canada the Second Largest Consumer.

To-day Canada ranks second in the list of countries enjoying the luxuries of gas—being exceeded only by the United States—and this despite the fact that Canadians are probably the heaviest consumers per head of electrical energy among all the nations of the world. In Canada, the Provinces of New Brunswick, Ontario, and Alberta have supplies of natural gas in commercial quantities; and in six Provinces—Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, and British Columbia—manufactured gas is sold.

Alberta in 1925 had 86 producing gas wells, and in that year for the first time superseded Ontario as the leading producer of natural gas. The Alberta production amounted to 9,119,500,000 c.ft. That of Ontario was 7,143,962,000 c.ft.; while the output of New Brunswick amounted to 639,235,000 c.ft. The total production of natural gas in Canada during 1925 was 16,902,897,000 c.ft., valued at $6,833,000.

The production of manufactured gas totalled 26,651,684,000 c.ft.; but of this amount only 13,507,487,000 c.ft. was made at the various gas plants for sale to the public, almost as much being produced in plants engaged primarily in the production of metallurgical coke. The total selling value of gas-works products was $18,859,130, including nearly $5,000,000 in bye-products.

Thermal Value of Natural Gas.

It is significant to note that the production of the cheap natural fuel exceeded by over one-quarter the sales of manufactured gas; and, as pointed out by the Natural Resources Intelligence Branch of the Department of the Interior at Ottawa, were the greater number of heat units in natural gas to be taken into account, the disparity in figures would be even more striking. Natural gas contains roughly 1000 B.Th.U. per c.ft., as compared with from 400 to 600 B.Th.U. for the manufactured gas. The latter, on the other hand, was made available to a greater number of people, as the population of cities supplied totalled slightly over 2,000,000. If the populations of Montreal, Toronto, and Winnipeg are subtracted from this total, one arrives at about the population of the communities served by natural gas, which is in the neighbourhood of 750,000 people.

Capital Invested and Persons Employed.

Comparison of statistics for 1925 brings to light the interesting fact that the capital invested in the natural gas industry in Canada is greater than the entire capital invested in the manufactured illuminating and fuel gas industry—in which class is included not only manufactured coal gas and water gas, but acetylene and Pintsch oil gas. The 161 operating firms in the natural gas industry had an invested capital of $48,894,802, and 1059 employees. The 44 manufactured gas plants represented a capital investment of $46,129,651, and gave employment to 3804 persons.

Value of Gas in Terms of Coal.

In Ontario, where coal has to be brought long distances, and mostly imported from the United States, it is of interest to note that the Ontario Department of Mines, in their report on the natural gas industry for 1923, worked out the value to the Province of this resource in terms of coal. They found that, neglecting the expense to municipalities of removing ashes, it would have cost $14,432,432 to replace natural gas which sold for $4,066,224. It would have been necessary to import 400,361 tons of coal, worth $3,003,410 wholesale, for use direct and in manufacturing gas. The comparison was carried farther; and taking into account the production of petroleum in the gas fields of Ontario, the loss to municipalities in taxes, &c., it was found that, in the year named, substitute fuels would have cost three and a half times as much as natural gas.

REESON-MOSS LIQUID PURIFYING PROCESS.

In this process (British Patent No. 249,312), which may be continuous or intermittent, as desired, the H_2S, CS_2, and HCN are removed by washing the gas with an alkaline solution of $Fe(OH)_3$. For the preparation of the latter any substances having a solvent action on hydrate of iron in neutral or alkaline solution may be used—such as salicylic acid, phthalic acid, polyatomic alcohols and their derivatives, citric acid and citrates, tartaric acid and tartrates, and many others. The prepared solution of $Fe(OH)_3$ absorbs the H_2S, forming Fe_2S_3; and the HCN and other cyanogen compounds are absorbed as ferrocyanide and sulphocyanide.

The solution of iron hydroxide may be employed in any type of washer in which the gas can be brought into intimate contact with the washing medium; and when regeneration of the solution is necessary, this can be accomplished by aeration with air or oxygen at either low or high temperatures. In the regeneration process, the air oxidizes the precipitated Fe_2S_3, with deposition of sulphur. The latter remains in suspension, allowing the iron purifying solution to be re-formed. When this is effected, the sulphur is removed. As for the cyanogen compounds, these gradually accumulate in the washing liquor, and can be removed by suitable means. Of course, additional prepared solution of hydroxide of iron is added as required.

Many advantages are claimed for the Reeson Moss process. They include: Saving in capital expenditure, repairs to plant, labour costs, and space; elimination of loss of gas and time in changing material in purifier boxes; no increase in back pressure due to fouling of material; recovery of sulphur and cyanogen as saleable products; elimination of nuisance and fire risk, which are apt to be present when oxide purifiers are opened; removal of CS_2 and cyanogen compounds, thereby minimizing the corrosive properties of the gas; and elimination of the risk of foul gas through sudden exhaustion of purifying material.

The Copperas-Tartrate Process.

The purifying solution is made by dissolving 1 to 2 p.ct. or more of tartaric acid in water, and neutralizing with soda ash or ammonia. (Equivalent quantities of Rochelle salt or crude cream of tartar may be used.) Copperas, previously dissolved in water, is added, and sufficient alkali to render the solution alkaline. The strength of the iron solution will depend mainly on two factors—the type of washer, and the quantity of impurities in the gas. With vertical centrifrugal washers, 2 p.ct. or more of copperas is advisable; but with tower scrubbers, less than 1 p.ct. is sufficient. The strength of the iron solution will decide the amount of tartaric acid used; 1 p.ct. of the latter being needed for 1 p.ct. of copperas, and so on. As for the degree of alkalinity of the washing solution, this may be as high as 2 p.ct., and as low as ½ p.ct. or less of free alkali. With efficient washing plant, the alkalinity may be kept low; whereas with a plant of insufficient capacity, it may be necessary to increase it.

It is claimed that, with effective washing plant, the whole of the H_2S is easily removed, and the HCN can be removed with equal facility. An important fact in connection with the process is that the chemical reactions involved in the washing of the gas and aeration of the liquid are not reversible, so that the removal of the last portions of H_2S can be carried out with a small quantity of liquid. The H_2S is removed partly as free sulphur, but principally as sulphide of iron in suspension. In the subsequent aeration the sulphide of iron is changed to free sulphur and oxide of iron (hydrated), which latter passes back into solution. A proportion of the sulphur becomes oxidized to thiosulphate, which neutralizes a portion of the alkali used, forming thiosulphate of soda (hypo), or of ammonia, as the case may be. The free sulphur formed remains suspended in the liquid, but has a strong tendency to rise to the surface. The HCN removed from the gas is absorbed as ferrocyanide, carbonylferrocyanide, and sulphocyanide. If the gas being purified is absolutely free from ammonia, and soda ash is used as alkali, the above compounds remain dissolved in the purifying liquid as prussiate of soda. Sulphocyanide of soda, &c., and the prussiate, may be recovered, together with thiosulphate of soda, by evaporating the liquid. If the gas contains ammonia—*i.e.*, if the ammonia washing is not complete, or if ammonia be used as alkali—a double ferrocyanide of ammonia and iron will be formed which is insoluble, and which will consequently contaminate the sulphur produced, and increase the consumption of iron salt. It is therefore advisable in all but the smallest plants to have separate washers for the cyanogen and the sulphur, as giving less complicated working and purer products, with higher and more economical recovery of cyanogen compounds, sulphur, and sulphur compounds. With separate washers the cyanogen washer would be arranged before the sulphur washer, and may be after the principle of any of the well-known systems of recovering cyanogen, either as ferrocyanide or as sulphocyanide:

1. As ferrocyanide.	Using copperas and utilizing the ammonia in the gas as the alkali.
do. do.	Using copperas and adding soda ash as alkali.
2. As sulphocyanide.	By the Williams process.
do. do.	By using a suspension of the sulphur obtained in the copperas-tartrate process in a solution of soda ash or of ammonia.

If the HCN be previously removed by one of the foregoing processes, the working of the sulphur washers will be simplified, and the solution easier to work-up for bye-products.

Aeration of Liquid.

As the fouled purifying liquid leaves the gas washing apparatus, it is sent to the aeration apparatus, where it undergoes treatment by means of air. The sulphide of iron is oxidized to free sulphur and oxide of iron (hydrated), most of which passes into solution. Only a small portion remains with the sulphur. The elementary sulphur formed during the oxidation remains in suspension until oxidation is nearly complete, and is then carried to the surface by entangled air bubbles, and can be readily floated off into a launder, giving a sulphur concentrate or sludge containing at least 10 and up to 20 lbs. of sulphur per 10 gals. of flotation product. This concentrate can be dealt with in any ordinary type of filter (such as a press, reducing the water content to under 40 p.ct.) or a continuous filter (reducing the water content to less than 20 p.ct. with simultaneous washing). The filtered sulphur, after simple washing and air drying, burns readily, leaving very little residue—about 2 to 4 p.ct.

In large-scale practice it is not essential that regeneration of the solution should be complete before returning to the gas washing plant (although regeneration should be complete before removing the sulphur), as the partially cleaned liquor is nearly as effective as the completely cleaned liquor. Therefore the following arrangement of gas washer and aerating plant would be sufficient for washing gas and aerating the liquid (without provision for sulphur recovery).

As sulphur would accumulate in the liquor, provision must be made for its removal. Therefore a small portion of the main volume of purifying liquid being circulated is diverted continuously through a subsidiary aeration plant (completely to clean it) and then through a flotation tank (to float off the sulphur), and thence back into the main liquor stream.

With a gas flow of 100,000 c.ft. per hour and a liquor flow of 2500 gals. per hour (25 gals. per 1000 c.ft.), the liquor diverted through the secondary circuit would be between 200 and 500 gals. per hour. The total stock of liquid would be 5000 gals., or 2 hours' supply.

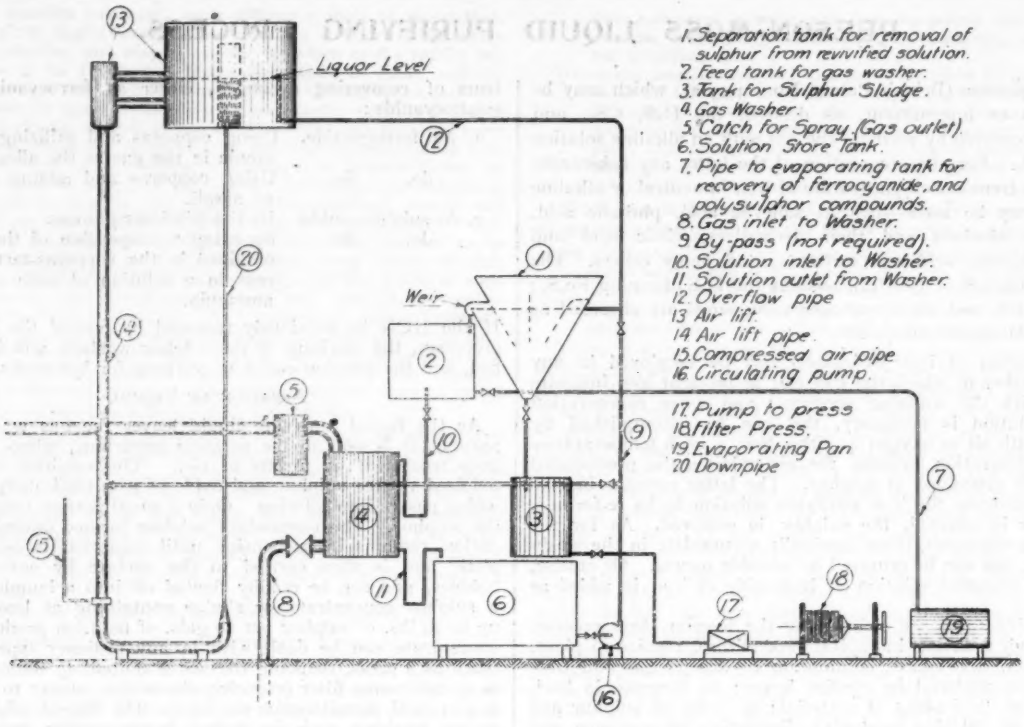
As thiosulphate and (if separate cyanogen washers are not used) cyanogen compounds gradually accumulate in the liquor, it is necessary to remove these by evaporation. This would be done by diverting a small flow (in the case under review about 20 gals. per hour) from the main liquor stream, and treating it, by evaporation and crystallization, to obtain the thiosulphate of soda and ferrocyanide (or the ammonia salts if ammonia be used instead of soda); the mother liquor from the crystals being returned to the main liquor.

Consumption of Chemicals.

Whether soda ash or ammonia (from the gas) be used as alkali, it will gradually be rendered inactive by a portion of the hydrogen sulphide being changed to thiosulphate instead of free sulphur, so that it is necessary continually to add fresh alkali to the purifying liquid to maintain its alkalinity. The amount to be added varies with the impurities in the gas and with the method of working, but may be set down as being between 0·05 and 0·15 lb., or sometimes more, of soda ash per 1000 c.ft. of gas treated (or, if ammonia is utilized, 0·017 to 0·05 lb. of ammonia, equivalent to 12 to 35 gr. per 100 c.ft.). The alkali is ultimately recovered as thiosulphate of soda (or ammonia). If a separate cyanogen washer is not used, the recovery of HCN will increase the alkali used to such an extent that, if the gas contains 50 gr. of HCN per 100 c.ft. of gas, the extra soda ash required will amount to 0·1 lb. per 1000 c.ft. of gas treated. This extra alkali will, of course, be required in the separate cyanogen washer if such is employed.

The sulphur produced in this process is mixed with a little oxide of iron to the extent of about 2 or 3 p.ct. This is derived from the iron salt used; and the latter must be replaced to maintain the washing solution at full strength. The amount of copperas required for this purpose will be well under 0·05 lb. per 1000 c.ft. of gas.

If the HCN be removed as ferrocyanide with soda as alkali, further copperas equal to 0·12 lb. per 1000 c.ft. of gas will be consumed (assuming 50 gr. HCN per 100 c.ft.), or, if ammonia


Liquor Level
Weir
1. Separation tank for removal of sulphur from revivified solution.
2. Feed tank for gas washer.
3. Tank for Sulphur Sludge.
4. Gas Washer.
5. Catch for Spray (Gas outlet).
6. Solution Store Tank.
7. Pipe to evaporating tank for recovery of ferrocyanide, and polysulphor compounds.
8. Gas inlet to Washer.
9. By-pass (not required).
10. Solution inlet to Washer.
11. Solution outlet from Washer.
12. Overflow pipe
13. Air lift
14. Air lift pipe
15. Compressed air pipe
16. Circulating pump.
17. Pump to press
18. Filter Press.
19. Evaporating Pan
20. Downpipe

be used as alkali, 0·24 lb. This quantity of copperas will be consumed whether or not a separate washer be used, and is a strong argument in favour of the removal of the HCN as sulphocyanide in preference to ferrocyanide.

Choice of Neutralizing Agent.

In practically all cases this is a matter of deciding between ammonia and soda ash. If ammonia be used, then a separate cyanogen washer is almost essential, as otherwise the whole of the ferrocyanide produced will be precipitated in an insoluble form with the sulphur. If soda ash is used, and both cyanogen and sulphur are removed in the one washer, then it is essential that every grain of ammonia be previously washed out of the gas before reaching the washer; otherwise the sulphur will be contaminated with insoluble ferrocyanide.

It is recommended that cyanogen be recovered separately from the sulphur by the sulphocyanide of ammonia process, and that the sulphur be removed by using either soda or ammonia as alkali.. Failing this, then both cyanogen and sulphur may be recovered simultaneously, using soda as alkali, and completely freeing the gas from ammonia before it enters the cyanogen and sulphur washer.

Temperature of Solution.

The washing of gas and the aeration of the solution may be effectively carried out at temperatures as low as 60° Fahr. A slightly higher temperature (between 70° and 80° Fahr.) gives better results, especially as regards aeration; the latter being accelerated by increasing the temperature. If any tendency towards lowering of the candle power of the gas appears, it can be checked by still further increasing the temperature of the washing solution to about 90° Fahr. The temperature of the solution is easily increased by circulating low-pressure steam or hot water through a coil immersed in the solution.

[The sole exploitation of the patent rights has been vested in the Chemical Engineering and Wilton's Patent Furnace Co., Ltd., of 76, Victoria Street, S.W. 1.]

AMERICAN GAS ASSOCIATION.

Notes from Reports and Papers—Third Article.

The Water Gas Committee, under the Chairmanship of Mr. Francis E. Drake, of the Lynn (Mass.) Gas and Electric Company, once again presented an extensive report, divided into several sections.

Bituminous Coal as Generator Fuel.

The question of uniform oil efficiency is discussed; and there is a chapter on the use of bituminous coal as generator fuel. The latter process has now passed the experimental stage; and the Committee believe that every operator in the country can take advantage of the savings to be effected by the employment of bituminous coal without fear of encountering great difficulties, as these have mostly been met and surmounted. Sizing, preparation, and quality of the coal selected must have proper attention, in the same way that the preparation of coke or anthracite for generator fuel has always been a guiding factor in efficient operation. Coals which disintegrate or sprawl-off under the actions of water gas operation are not suitable for the purpose. Rules are given for the operation of a carburetted water gas plant working with 100 p.ct. bituminous coal.

Carborundum Generator Lining.

The Sub-Committee on Refractories, considering various types of linings now used in water gas sets, state that several companies have employed carborundum for generator lining, with varying results; and with the object of indicating under what conditions this material is likely to give the best service, the following test is quoted: A number of fuels were used while experimenting with carborundum, starting with broken anthracite in one set equipped with veneer blocks. The run lasted 2000 hours, with no apparent effect on the lining. Such clinker as formed was easily knocked off the walls, and when removed from the machine showed the imprint of every irregularity of the lining. Later, coke was tried in another set similarly lined; and the new lining went to pieces in less than 500 hours. The experience seems to have been, under the conditions stated, that the carborundum and the coke fused together; and that it was frequently easier to break the clinker than the bond at the wall. The Committee's theory for the rapid deterioration of the lining was that the veneered blocks broke off, being too light to withstand the barring. Another machine was equipped with solid carborundum blocks 4 in. in thickness. This lasted somewhat longer; but the Committee still found that the carborundum broke rather than the bond or the clinker, and that there was no particular advantage in using this material, from the standpoints of either additional life or time saved in cleaning. The lining was not tested to a finish on anthracite coal; but from such observations as the Committee were able to make, they would say that carborundum lining should last ten times as long as firebrick, and save at least two-thirds of the barring-down time.

Water Jacketted Generators.

There are a few water gas installations in the United States fitted with water jacket generator linings. The primary purpose of the water jacket is to prevent the formation of wall clinker; and this, the Committee say, it does without a doubt in the effective zone of the jacket. It also has a chilling effect on the fire. Steam is made at the expense of generator fuel. At one plant is was estimated that 2 lbs. of generator fuel went to make steam for every 1000 c.ft. of gas made. Unless a boiler fuel can be used i the generator, and more than one

machine can be in operation at the same time to use the steam made, it is impracticable. Other conditions being the same, the jacketted machines use more air than the ones which are unjacketted. The fact that there is no wall clinker allows a larger effective grate area. The jacket also cools the surrounding lining, tending to make it last longer.

Disposing of Water Gas Plant Effluents.

The Steere Engineering Company, of Detroit, have worked out a method of disposing of all the effluent liquor or condensate from a water gas plant, using either coke or soft coal as generator fuel; and the process has been in completely successful operation for several months. The mode of procedure is thus outlined by Mr. F. W. Steere: A decanter of suitable size must first be provided. Most gas-works are now equipped with decanters that can probably be satisfactorily used. All the drips containing any oil or condensate from the gas are discharged into this decanter. The condensing system effluent is discharged into the decanter, as well as the wash-box overflow. The decanted liquor from the clean end of the decanter is pumped back to the water gas machine, where it is sprayed into the top of the superheater during the back-run part of the cycle. This effluent is used instead of clear water, and replaces the steam employed during this part of the gas making cycle.

This development, it is said, completely solves the problem of effluent disposal from a water gas plant, and at the same time puts this effluent, with the sensible heat which it contains, to useful work in the gas making process, and releases an equivalent number of pounds of steam for other purposes. On combination coal gas and water gas plants, part of the coal gas plant effluent can be used in the water gas machines. The quantity of coal gas effluent which can be disposed of in this way, of course, depends on the ratio of the two processes employed. On many combination plants, it will be found that all the effluent can be so disposed of; and on straight water gas plants, absolutely every drop of effluent that is otherwise discharged from the plant can be utilized in the gas making process.

Three-Part Rate for Gas.

The Committee on Rate Fundamentals state that the Executive Board of the Association have carried into effect the recommendation of the Committee that a Rate Bureau should be established at Association Headquarters, to work continuously under the supervision of the Secretary-Manager and the Committee, to give expert advice to companies and others as to advisable forms of rates, the economic factors which should enter into rate making, and the most practicable ways and means of furthering the adoption of sound principles in rate structures. Mr. C. S. Reed has been placed in charge of this Rate Bureau; and already he has rendered substantial service in aiding companies to overcome the inertia which has held back the three-part rate, and in advising as to the most practicable lines of progress. The great quantity of useful material which has been gathered and analyzed by the Rate Structure Committee has been placed fully at the disposal of Mr. Reed; and that Committee have been co-operating closely with the Committee on Rate Fundamentals. The Rate Bureau are preparing, under the supervision of the last-named Committee, a manual or handbook of information and suggestions as to the elements to be taken into account in devising sound and acceptable rates for particular communities, classes of consumers, types of demand and use, &c., together with data which may be used in advocacy of better rate-making before the Commissions and the general public.

Education of Employees.

The Committee on Education of Gas Company Employees (whose Chairman is Mr. B. J. Mullaney) are proud of the Home Study Course on Manufactured Gas established a year ago by the Columbia University at the request of the Committee and under their auspices. This course has been a great success, for more than 900 gas company employees are taking it. Gas companies have been urged to encourage and assist their employees in following it; and the response has been most gratifying. In many companies, groups of enrolled employees have been organized for discussion and instruction—this supplementing in a helpful way the instruction sent out by the University.

The course consists of 24 lessons, the first half dealing with the problems of producing and preparing for distribution the main types of manufactured gas. The second half relates to distribution and utilization of gas, as well as with questions of accident prevention, statistics, accounting, rate making, and public relations. It is planned that these 24 lessons should constitute two years' work for a man who has had a high school education including one year of chemistry and physics, and who is employed in the gas business.

BRIGHTON AND HOVE SPECIAL ORDER.

Extension of Limits.—Conversion of Stock.

A Special Order granted to the Brighton and Hove General Gas Company under section 10 of the Gas Regulation Act, in addition to containing a number of clauses which are now frequently found in Gas Acts and Orders, deals with other matters of individual application.

Gas Supply Limits Extended.

From and after the date of the Order—which is Dec. 10, 1926—the limits of the Company for supply of gas are extended so as to include the parishes of Falmer, Stanmer, and Telscombe, in the rural district of Newhaven. If, however, after the expiration of five years from the date of the Order the Company have not laid down mains for the supply of gas in a parish or part of a parish in the added limits, the local authority or any company or person will be at liberty to apply for an Act or Order, and for the repeal of the Company's powers.

Stock Conversion.

The total authorized ordinary and preference capital of the Company stands now at £787,620. The figure was originally £795,000; but an amount of £7380 of ordinary stock has been redeemed. The total paid up, after deducting the small portion redeemed, is £568,940; and the premiums amount to £69,219. There is thus authorized but unissued stock to the extent of £149,461. The Company possess also unexercised borrowing powers to the extent of £49,820, out of a total authorized of £341,895. The original ordinary consolidated stock, with a standard dividend of 10 p.ct., amounts to £214,740; and there is paid up £244,200 of "A" ordinary consolidated stock, with a standard dividend of 7 p.ct. The preference stock issued is divided into £50,000 of 6 p.ct. consolidated stock, £10,000 of 4 p.ct. consolidated stock, and £50,000 of 6 p.ct. redeemable stock. The Order converts the £214,740 of original ordinary consolidated stock and the £244,200 of "A" ordinary consolidated stock into two classes, to be called respectively 6 p.ct. standard consolidated and 5 p.ct. standard consolidated stock. The conversion is according to the following scales: For each £100 of original ordinary stock, £166 13s. 4d. of 6 p.ct. standard stock; and for each £100 of "A" ordinary stock, £140 of 5 p.ct. standard stock. Fractional parts of £5 of stock will not be issued, but may be bought or sold to make up even amounts. The effect of the conversion scheme on the nominal amounts of stock is not to be taken into account in calculating the limits of the special purposes fund and the renewal fund. In respect of any 5 p.ct. standard stock or preference stock issued after the date of the Order (exclusive of the conversion of capital) the Company may borrow sums not exceeding in the whole one-half of the amount (including premiums) which at the time of borrowing has been raised by the issue of such stock. The Company may issue redeemable preference capital and debenture stock.

Standard and Differential Prices.

The standard price for gas supplied by meter within the county borough of Brighton, the borough of Hove, and the urban district of Portslade-by-Sea is fixed at 12d. per therm. In the outer area, the Company may exceed this price by the following amounts: 0·6d. per therm in the urban districts of Shoreham-by-Sea and Southwick and in the parish of Portslade (certain parts of these districts excepted); 1·2d. per therm in the parish of Patcham, and in parts of the urban districts of Shoreham-by-Sea and Southwick and of the parishes of Portslade and Rottingdean; 2·4d. per therm in the parishes of Lancing Ovingdean and Old Shoreham, and in the remainder of the urban district of Shoreham-by-Sea and of the parish of Rottingdean; and 3d. per therm in the remainder of the outer area. The increases or reductions of the standard rates of dividend consequent upon the fall or rise of the price are, for each one-fifth of a penny per therm (in respect of any half-year) 1s. 6d. p.ct. on the 6 p.ct. standard stock, and 1s. 9¾d. p.ct. on the 5 p.ct. standard stock.

In any year a sum not exceeding an amount equal to ½ p.ct. of the paid up capital, including premiums, may be appropriated to a renewal fund; the maximum sum standing to the credit of the fund at no time to exceed one-twentieth of the paid-up capital. Surplus profits may be carried forward—with the proviso that it shall not be lawful for the Company to carry forward at the end of any year a sum exceeding—

(*a*) The amount required by the Company for paying any dividend or interest which the Company are entitled or required to pay, but have not paid, in respect of that year;

(*b*) An amount equal to the total sum which the Company would be lawfully entitled to distribute as dividends on their preference and ordinary capital in respect of the next following year, having regard to the price charged by them for gas at the commencement of that year; and

(*c*) An amount equal to the total sum which the Company will be required to pay during the next following year as interest on any mortgages or debenture stock.

The qualification for a Director is the possession in his own right of £1500 of standard consolidated stock.

WALES AND MONMOUTHSHIRE JUNIOR GAS ASSOCIATION.

Meeting at Newport, Mon.

The members of this Association paid visits to the Works and Offices of the Newport (Mon.) Gas Company on Jan. 8. The visitors assembled at the Crindau Works, and were received by Mr. J. F. RUST, Deputy Engineer and Manager, who apologized for the absence of Mr. J. H. Canning and others through illness. On behalf of the Chairman and Directors and the management, he extended a hearty welcome to the Association.

An inspection was made of the works under the direction of Mr. Rust and others, after which the members visited the Mill Street Offices of the Company. Here the visitors were the guests at tea of the Chairman and Directors of the Company.

On the proposition of Mr. F. OSBORNE (Cardiff), seconded by Mr. C. COLLINS (Swansea), a vote of thanks was passed to the Chairman, Directors, and Management of the Company for their kindness and hospitality.

The members then assembled for a general meeting, at which Mr. T. V. BLAKE, Senior Vice-President, presided in the absence of Mr. C. Bateman, the President.

Thanks were recorded at the receipt from Mr. H. D. Madden, M.Inst.C.E., of Cardiff, of 87 copies of Reports of the Proceedings of Mechanical Engineers, for the Association Library, and from Mr. Octavius Thomas, of Pentre (on behalf of the Wales and Monmouthshire District Institution of Gas Engineers and Managers), of a copy of the Reports of District Associations for 1925.

DRY PURIFICATION.

By C. B. FELTON, of Newport (Mon.).

[EXTRACT.]

I will deal with the purifiers you have inspected at the Crindau Works of the Newport (Mon.) Gas Company. You will have observed that the Directors have installed three sets of boxes, capable of working as individual units or as a combined unit. No. 1 set, which has the old type water-lute cover, is enclosed under a roof, and comprises six boxes each 20 ft. square. No. 2 set is not enclosed, but is under roof, and comprises six boxes of similar size to those in the No. 1 set. No. 2 set is fitted with the more modern hand-screw covers and rubber joints. No. 3 set, entirely in the open air, comprises six boxes, each 30 ft. square, which have covers similar to the last-mentioned, but are fitted with a more modern type of lifting appliance. Sets Nos. 2 and 3 are coupled with a valve of the modern type enabling the stream of gas to enter at either the bottom or the top of the boxes. By this means, any number of boxes desired may be worked. No. 1 set having an older type of centre valve, the gas is only able to enter at the bottom of the boxes.

Before describing the general method of working, I will outline a few points which led to the adoption of the present system. At the latter end of 1925, during the period of heavy loads, we experienced considerable trouble owing to the frequent fouling of boxes. Fresh boxes put into operation returned a foul test after a comparatively short period; and at times it almost seemed that the oxide had lost its power of functioning. As a result, steps were taken thoroughly to examine samples of the oxide from all our boxes; and, after many tests, it was discovered that, of the material in use, two parcels only were in such condition as to warrant discharge and replacement. The remaining oxide was found to have a sulphur content varying from 27 to 45 p.ct., was not unduly moist, and was consequently in the best state as regards activity.

It was observed that with a sharp drop in temperature, our difficulty was most pronounced; and with a view to correcting this—and having regard to the low temperatures prevailing at night at that time—it was decided to raise the temperature of the boxes by means of steam connected to the inlets of each of the three sets. The steam connection was made at a point as far away from the boxes as practicable, to enable the products in the mains to drain off into the syphons, and thus prevent undue moisture finding its way into the boxes. By thus raising the temperature, some improvement was effected; and though the oxide in some cases became very wet, and we had to draw off considerable quantities of water from the drain cocks at the bottom of the boxes, the necessity to change boxes owing to the mounting-up of pressure did not arise.

Continuing the investigations, it was thought that the oxide had perhaps become acidified; and with a view to the rectification of such a state, a small quantity of ammonia was permitted to enter the boxes with the gas—one of the scrubbers being slightly by-passed. While this gave some relief, it was tried merely as an incidental experiment, and was not persevered with, as it is attended with a certain amount of risk undesirable in sound practice.

On the theory that possibly the volume of gas was too small, and that it created channels along which the flow was continually passing, arrangements were made to prolong the duration of the gas contact with the oxide. This, of course, served the same purpose as raising the volume passing through the boxes. It needed little time, however, to prove that the trouble experienced did not arise from this source; and it was decided to try once more the experiment of adding ammonia. Subsequently any box giving a foul test was cut out of the series, the cover raised, and the oxide sprayed with liquor having a Twaddell strength of 4½°. In each case the cover was allowed to remain lifted as long as possible. After the first application of liquor in this way, all that was done afterwards was to raise the covers; and equally satisfactory results were obtained. This led to the discontinuance of the liquor spraying.

Boxes treated in this manner kept clean for longer periods; and while formerly all four boxes in each set were in operation, we are now able to cut down to three boxes, leaving the fourth in reserve for any emergency.

Having apparently overcome our difficulty, the conclusion was formed that for some reason (most likely the varying temperature) the oxide in the boxes, though apparently good for work, was in a dead state, and did not function properly. My own opinion is that, by the constant lifting of the covers, the exposed portion of the oxide commenced its "see-saw" action, which developed gradually until the whole of the content of the box was working normally. During the past year there has been no repetition of the 1925 troubles; and, of course, departmental costs have been greatly reduced.

METHOD OF WORKING.

It may be of some interest if I set out briefly the method of working formulated in the light of our experience. With the exception of our No. 1 set, the flow of gas is changed weekly, which means that for one week the gas enters at the bottom of the boxes, and for the succeeding week at the top; the intake to the box being alternately reversed each week. One spare box and a catch box are kept in reserve, so that only three boxes in each set are active; and these are immediately changed if a faint stain is given by the third box. Admission of air was adopted to replace the lifting of the covers, which is now necessary only for the purpose of breaking-up the surface of oxide in a box threatening undue pressure, or for discharging the oxide when fully spent.

RECORDING THE STATE OF THE OXIDE.

With the introduction of our present system, it was realized that some scheme should be adopted whereby the history of the oxide in the boxes was available. All that is necessary is a filing box divided according to the number of purifiers on the works, together with the record cards. The following gives particulars of the card we are at present using:

Oxide Record Card.

1. Date.	2. Box.	3. House.	4. State.	5. In or Out.	6. Reason for Removal.	7. Test Results.	8. Plot.
1/1/26	1	2	New	..	..	..	..
1/1/25	2	2	20 p.ct. S.	In	..	20 p.ct. S.	..
6/7/26	3	2	34 p.ct. S.	Out	Pressure	34 p.ct. 7/7/26 33 p.ct. 8/8/26	3 ..

The record card is sub-divided into eight sections, which I have numbered for purpose of reference. To illustrate the entries, we will suppose that No. 1 box, in No. 2 house, is filled with new oxide. This information is posted on the record card; the date on which the oxide is placed in the box being inserted in column 1. Separate sets of cards are, of course, employed for the respective purifiers, and are filed in this way so that information required about oxide in use in any particular purifier is immediately available.

Following the entries referred to above, the record card is inserted in its appropriate compartment. Now, supposing that at the end of six months a purifier box is throwing undue pressure, and the oxide has to be removed, the date of such procedure is entered in column 5, together with the letter P (an abbreviation to denote pressure). The number of the plot on which this oxide is placed for treatment is also entered under column 8. Samples of the oxide are selected and put under test; the results being set out in column 7. Fresh columns are created for any information or particulars required, such as cost of discharging and charging, painting, &c.

The CHAIRMAN, in proposing a vote of thanks to Mr. Felton, congratulated the Newport Company upon their record card, from which one could see at a glance how far revivification had proceeded, and the state of the oxide.

Mr. R. J. WILLIAMS (Abertillery) seconded the vote, and Mr. FELTON replied.

"B.C.G.A." Publicity Material.—The British Commercial Gas Association have issued a new price list of their publicity material.

Institution of Mining Engineers.—The thirty-seventh annual general meeting of the Institution of Mining Engineers will be held at the Institution of Mechanical Engineers, Storey's Gate, Westminster, on Wednesday, Feb. 2, at 11 a.m.

MANCHESTER AND DISTRICT JUNIOR GAS ASSOCIATION.

Visit to Messrs. J. H. Robinson & Co. (Liverpool), Ltd.

Over fifty members of the Association visited on Wednesday, Jan. 5, the works in Mill Lane, Old Swan, Liverpool, of Messrs. J. H. Robinson & Co. (Liverpool), Ltd. They met at the Exchange Station, from which conveyances took them to the works, round which they were shown, after having been received by Messrs. Sandford Robinson (Director), G. Robinson, Gilbert, Fox, A. J. Povah, and McLoughlin.

DESCRIPTION OF THE WORKS.

The firm was founded by Mr. J. H. Robinson in 1869, and commenced with only two or three men making enamel dials, &c.; but before he died (five years ago) there were 300 men working, and two branches in the gas meter making business.

Press Department.—In this department about sixty power presses, exerting from 6 lbs. to 100 tons, are arranged. The heavy presses are used for the production of hot pressed stampings; and the firm claim their method of stamping is original, and developed entirely by themselves.

Gas Meter and Gas Plant Department.—In this department there are about 70 persons engaged principally in repairing and manufacturing gas meters, test holders, and other appliances.

The "Peak Load" Meter.—The name "Peak Load" was adopted as inferring that the meter will stand-up to any load which may be expected from consumers. The meter will therefore be made in convenient sizes, and rated by hourly capacity. In principle the meter is on exactly the same lines as those that have been in common use for the past fifty years. The firm have only simplified the construction. The main points are as follows:

(1) The lower casing forms not merely a housing for the diaphragms, but actually the diaphragm rim; and the gasways pass directly into the several compartments from the valve ports.

(2) The weight of the leathers and discs is carried by vertical toggles, which allow the leathers to travel with a perfectly central and piston-like movement. A second pair of toggles arranged horizontally keep the discs and leathers from any canting or twisting movement. This ensures a minimum of pressure absorption, and practically no oscillation.

(3) Two spindles pass through ball-and-socket joints. The balls (which are soldered to the spindles) serve a dual purpose—namely, as a fulcrum for the swinging spindle, and as a seal between the upper and lower chambers. These ball-and-socket joints take the place of the rod stuffing boxes.

(4) The lower ends of these levers are attached, by a link, to the centre of the diaphragm discs, and the upper ends are coupled to the slide valves; the front leather operating the back valve, and the back leather the front valve. Suitable links are mounted on the ends of the levers; and the reciprocal movement is thus converted into a rotary one to operate the recording mechanism.

(5) The only stuffing box in the meter is that which seals the gas from entering the index pocket. But this is negligible, for it is fitted to the slowest moving member; and further to reduce the revolutions through this stuffing, a simple gearing is introduced, so that the actual revolutions are stepped-down from ten to one.

(6) By the direct passages for gas, all bends, elbows, &c., which mean restriction in the gas flow, are eliminated, with the exception of the valve covers, which will always act as **U** bends. Also, by the direct drive, many links and cranks (which mean frictional resistance and pressure absorption) are done away with. In the old type of meter there are 120 to 150 pieces, whereas in the "Peak Load" meter there are about 62.

Every effort has been made, first, to give a larger capacity for every inch of case dimension, and, secondly, so to simplify manufacture that the cost will enable customers adequately to meter their districts at the lowest possible outlay.

"C" Type.—This meter is constructed entirely on the old conventional lines; but the firm have incorporated several improvements, in order that larger valves may be fitted into small cases, and also larger and more direct gasways. The main improvement in this meter is the method of valve operation. The old crank has been replaced by a system of bell crank levers, pivoted in such a way that the valves, which are arranged in parallel, travel only the prescribed distance. This is accomplished by an eccentric revolving in the slotted portion of the levers. The rocker rods, also, have been placed closer together; and this has been made possible by cranking the rods in a peculiar way. The reason for placing them in this position is to allow the leather to oscillate at equal distances on either side of the rod. This eliminates the "drag" caused by the radial movement of the leather in travel, and therefore lessens pressure oscillation.

Other Types.—The Robinson patent two-coin interchangeable prepayment meter was a boon to many gas engineers. Their lubricated meters have been in continual demand, and have proved a decided success in reducing unaccounted-for gas. The firm's latest design of prepayment valve is positive in action, and may be lubricated. The massively constructed prepayment mechanism, combined with this valve, will save considerable anxiety to those on the distribution side of the gas industry, over the question of shortage of cash. At the present time, the firm are developing their three-coin prepayment attachment. There are also their extra large capacity "B" meters.

Station Meters, &c.—The firm have completed a considerable number of all sizes of station meters, and the fitting of new drums up to 100,000 c.ft. per hour. Their patent drum considerably increases the capacity of existing meters. They are also considerable manufacturers of standard test holders, and have just completed an addition to the Mill Lane Testing Station of the Liverpool Corporation.

Gas Muffles.—Besides the fifty odd tinmen's stoves, gas muffles specially designed by Messrs. Robinson are used for heating the brass sections. The solid brass rod is first cut into pieces of suitable size, and then passed into the muffle and heated to a blood-red heat. Upon releasing a lever, a red-hot section rolls into position, and a single blow of the press produces either a union cap, a boss, a lining, a crown wheel, or a slot valve for meters. These can be produced at the rate of 400 an hour. None but the very best brass with a high percentage of copper can be used for this hot-pressed process; for the zinc in a poor quality of brass will fuse at the necessary heat, and fracture under the press. It is, of course, necessary for all threads to be turned in a separate operation after this hot-pressed process.

An idea of the work turned out by the "automatics" may be gathered when it is stated that 6000 to 7000 gas meter spindles and 20,000 wheels of 60 teeth each are turned out per week; 60 wheels being cut on each machine in one operation. The firm maintain their long reputation for the design and manufacture of enamel dials. In the books of dial designs exhibited there were no fewer than 3000 designs for dials of various kinds; some of the leading meter manufacturers having no more than 300 different designs.

Subsequently, the members were the guests of the firm at tea at the Exchange Hotel.

Mr. J. BRIDGE (Elland), one of the representatives of the British Junior Gas Associations on the Advisory Committee, attended the meeting, and asked members of the Association to let him know of any cases of difficulty in complying with the regulations of the Education Scheme, so that he might bring these before the Advisory Committee, who were anxious that the scheme should be as successful as possible.

Mr. MALONE (Bury), moving a vote of thanks to the firm, said a point that must have struck all the members was the effort made to evolve a meter suitable to the everyday requirements of the gas industry. If the meters seen that afternoon became universally adopted, many of those in charge of districts would feel more confident that the gas was not being robbed of its pressure, and that the full quota was being paid for.

Mr. PAYNE (Liverpool), seconding, remarked that the hot-pressed unions had struck him very much, as they all knew the trouble caused by the stripping of the threads of gas meter unions when poor quality brass was used. He strongly advised that all meters should be fitted with a lubricating device.

Mr. ROBINSON, in reply, expressed the hope that the members would visit the works again on some future occasion.

GAS-WORKS INSTRUMENTS.

By D. BENSON, B.Sc., A.I.C., of Bolton.

[EXTRACT.]

Nowadays, when gas engineers realize the necessity for the scientific control of gas-making, so as to ensure efficiency and economy, the use of scientific instruments at gas-works is becoming more general.

GAS CALORIMETERS.

To obtain accurate results with gas calorimeters of the flow type, it is necessary to have a supply of water at a constant temperature and under a uniform head; an accurate meter for measurement of the gas; and a governor, so that the gas can be supplied at a steady pressure.

The water supply must be as soft as possible, to prevent scaling of the tubes, which interferes with the interchange of heat, and also restricts the flow of water. The supply of water at a uniform head and constant temperature can be obtained by having a large tank overhead, near the calorimeter, with a ball-cock feed from the town supply. The tank needs to be of fairly large capacity—say, between twenty and forty gallons. The gas meter, usually of the wet type, and of a capacity of $\frac{1}{2}$ c.ft. per revolution, must be kept level, and the water-line must be correctly maintained. This water-line should be checked periodically by a standard $\frac{1}{2}$ c.ft. measure.

The inherent errors of flow calorimeters are:

1. Loss or gain of heat due to difference in temperature between inlet air and exit gases. This is corrected-for in the case of the Boys' calorimeter.
2. Loss or gain of heat due to the different hygrometric states of the air and the gas.
3. Radiation and convection losses.
4. Errors due to the assumption that one litre of water weighs one kilogram. In the new Boys' box calorimeter, the water is actually weighed, thus obviating this error.
5. Thermometer errors.
6. Errors due to design.

Thermometer errors are frequent; contraction of the glass stem of the thermometer continuing for about ten years after making. Errors of 0·1° are common, while errors of 0·2° to 0·3° are sometimes encountered. It is not sufficient to check the thermometers against one another in melting ice, or a bath at any other temperature, and then apply the correction so found to one or the other, as errors are not as a rule constant over the whole range of the thermometer. A thermometer should be kept which has been standardized by the National Physical Laboratory. Calorimeter and other thermometers can be checked against this over their whole range. Another necessity is a good standard barometer with a vernier scale. The limit of accuracy of a calorimetric determination is usually about 3 B.Th.U. It is therefore foolish to give calorific values to the first decimal place.

The principal points to watch with a gas calorimeter are: Gas-tight connections; correct water-line of the meter; correct rate of flow for gas and water; the relation of inlet water temperature to room temperature; steadiness of inlet and outlet water temperature; and a fair average for any test. Without this attention, no calorimeter, however much skill is used in determinations, will give accurate results.

Furring of the tubes of flow calorimeters can be cured by the use of dilute hydrochloric acid; while the outsides of the tubes should be periodically bathed in washing soda to counteract acidity. Tests should not be made on a flow calorimeter before a lapse of three-quarters of an hour after lighting

Recording Calorimeters.

A recording calorimeter should give results that are accurate to within 1 p.ct., and should also correct automatically for temperature and pressure—*i.e.*, to 30 in. Hg, and 60° Fahr. The points requiring attention in water-flow recorders are in the main identical with those of water-flow calorimeters. A point needing some attention is the time-lag of the recorder. The gas supply to the recorder should come from a "live" main, which should be of sufficient size adequately to supply the gas required by the recorder. The lag due to the service can be made smaller by use of a "bleeder" burner; while the lag of the recorder itself can be determined. This lag must be taken into account when checking the recorder. Even when the lag is known, it is preferable to check the recorder when the calorific value of the gas is steady. It is not advisable to correct the pen for errors up to ± 10 B.Th.U.; and even when the correction required is larger, the calorific value obtained by a spot test should be duplicated. Errors can be booked on the chart when the check tests are taken. Where no automatic correction for temperature and pressure is made by the recorder, this should be taken into account when correcting the chart. In cases where recorders giving net values are set to give gross values, it must be remembered that the deviation of the net value from the gross value is not constant. One recording calorimeter on the market which gives results that can be absolutely relied on is the Fairweather continuous recorder, which is now being used with success by many large gas undertakings. While recording calorimeters in general are not too reliable, they can render useful service.

Measurement of High Tempepatures.

Modern methods of gas manufacture demand a stricter supervision of working temperatures than was aimed at a few years ago; and the regulation of heats by the eye alone is not sufficient. Pyrometers are now recognized as being essential to the good working of many gas-works processes. There are several types of instrument for measuring temperatures which cannot be ascertained by the ordinary mercury-in-glass thermometer. The choice of the type of instrument used depends upon the purpose for which it is employed and the accuracy demanded of it. For ordinary works practice—*i.e.*, regulation of retort temperatures—accuracy can be sacrificed slightly to allow of portability and simplicity of operation.

Special Mercury Thermometers.

These depend upon the expansion of mercury, under pressure, with rise in temperature. The mercury is contained in a bulb of mild steel which is connected by a steel capillary to a steel Bourdon spiral. Changes of temperature give rise to changes of pressure. These are transmitted to the Bourdon spiral, which has a pointer or pen mechanism connected to it. The Cambridge Instrument Company make the Hohmann & Maurer instrument, which has a range of from 40° to 540° C., and is accurate to within 1 p.ct. This type of thermometer is handy for use with tar stills or sulphate plant, and for records of the inlet and outlet temperatures of condensers and purifiers.

Optical Pyrometers.

These make use of the visible rays radiated from hot bodies. Several forms of optical pyrometer are made depending on the comparison of different colours with the heated object. Pyrometers of this type, however, are dependent on the human element, and as a rule results cannot be duplicated.

In the "Wedge" optical pyrometer the image of the hot body is focussed on a wedge of red glass. By increasing the thickness of glass between the eye and the image, the latter can be made to fade. The point at which it fades gives the required temperature. This will give readings between the limits of 500° and 2100° C. The Wanner optical pyrometer compares the intensity of light from the hot body with that of a standard source of light. In the Cambridge optical pyrometer, the rays from a standard light, and those from the hot body, are polarized in different planes, and rendered monochromatic. They finally pass through to a single eyepiece; and the observer sees an illuminated circular field divided into two segments. One segment is filled by an image of the hot body, and the other is uniformly illuminated by the electric lamp. The segments are adjusted to equal brightness by rotating a nicol prism to which a scale pointer is attached, reading on to a scale calibrated in degrees of temperature. The range of this instrument is 700° to 4000° C.

One of the handiest forms of optical pyrometer, which combines accuracy with portability and simplicity, and which does not depend on the human factor, is the disappearing filament pyrometer made by the Cambridge Scientific Instrument Company. It can be had in two ranges—700° to 1400° C., and 1000° to 2100° C.—or with a double scale giving readings from 700° to 2100° C. In this instrument an image of the hot body is formed, by means of a lens, on the plane of the filament of a small electric bulb. The filament and the image are viewed through a second lens. The brightness of the filament can be altered by varying the amount of current flowing through it from a small 2-volt accumulator. When the brightness of the tip of the filament is equal in intensity to the hot body, it disappears; and the current passing is read off directly in terms of temperature on a moving coil milliammeter incorporated in the instrument. If the current is not sufficient, the filament appears as a black line on a bright background. If too much, it appears bright on a dark background.

Radiation Pyrometers.

Of this type is the Féry pyrometer. In this instrument the heat rays emitted by the hot body are focussed on to a thermo-couple, and the current generated is read in terms of temperature on a galvanometer. The instrument is made in three ranges: 500°-1100° C., 600°-1400° C., and 800°-1700° C.

In the Féry spiral pyrometer the rays are focussed on to a bi-metallic spiral, thus causing it to give a deflection. A pointer attached to the spiral swings over a calibrated scale. This form is self-contained, and is much cheaper than the thermo-couple instrument, but not so accurate.

Having discussed resistance and thermo-electric pyrometers, and carbon dioxide indicators and recorders, the author went on to say that the accurate volumetric measurement of the gas produced by a gas-works is an essential. Difficulties of measurement arise due to variations in the physical conditions under which the gas must be measured—such as temperature, pressure, specific gravity, and humidity.

The station meter of the wet type, though accurate, is costly, and occupies considerable space. Rotary meters can only be used with clean gas, and are liable to error due to the momentum of the moving parts when the rate of flow varies. The Cambridge flow recorder consists of a Pitot tube in conjunction with a sensitive differential pressure gauge which measures the velocity of the gas passing through the pipe, and from which the volume of the gas can be determined. The Bailey meter measures the differential pressure on each side of an orifice in a disc inserted in the gas main. The differential pressure is measured by a bell floating in oil; it records on a chart, and, by integration, the quantity is also registered on a series of dials.

The "Electroflow" meter measures the differential pressure due to insertion of a disc in the main, or, by using a Pitot tube, electrically. The difference in pressure is communicated to a form of **U** tube containing mercury, in one arm of which is immersed a graduated series of metal prongs connected to resistances in an electrical circuit. A rise in the mercury level in the limb gradually lowers the resistance in the circuit, while a fall in the mercury level increases the resistance in the circuit. The flow is integrated to give the quantity of gas by use of a watt-hour meter. Fluctuations in the voltage of the electricity supplied to the instrument are automatically compensated for.

In the Thomas meter, the basis of measurement is the specific heat of the gas, which is the most constant property of the constituent gases in town gas. The gas is measured by raising its temperature 2° Fahr. by an electric heater, and measuring the quantity of energy thus required. The meter integrates the total volume, and gives a graphic record of the

flow. The results with this meter are given directly in c.ft. at standard temperature and pressure, without any correction being applied. With other types, corrections have to be made for temperature and pressure, also for changes in specific gravity.

Discussion.

Mr. GOODIER (Runcorn) asked what was the maximum variation of outlet water temperature allowable in a Boys' calorimeter test.

Mr. BENSON replied that before a test could be accepted with confidence, there should not be a variation of more than 0·1°.

Mr. JOLLY (Blackpool) asked if the results obtained with the disappearing filament pyrometer were affected by the human element.

Mr. BENSON replied that the disappearing filament pyrometer did not depend on the matching of colours, but on the matching of an intensity; and therefore results were unaffected by variations in sight. It was found that the results obtained by a number of persons using this instrument did not vary more than 5° C.

Mr. CARTER (Liverpool) gave his experiences with the Thomas flow meter, and said that in Liverpool they had found it remarkably accurate if the gas entering the meter was kept above its dew-point.

Mr. BAMBER (Bolton) mentioned the importance of suitably housing all scientific instruments, if accuracy was to be obtained.

A vote of thanks was moved by Mr. I. GREENWOOD (Blackpool), and seconded by Mr. H. GOODIER (Runcorn), to which the author replied.

OXIDATION OF AMMONIUM SULPHIDE.

In the current issue of the Chemical Society's Journal, Applebey and Lanyon discuss the recovery of ammonia from coal gas. They quote the familiar statement that crude gas contains more than sufficient sulphur to furnish the necessary sulphuric acid for the fixation of the ammonia, and make mention briefly of the methods of Cobb, Feld, and Burkheiser.

The authors detail results of an investigation the primary purpose of which was to find whether, by means of a suitable catalyst and working conditions, it was possible to effect the oxidation of the sulphur contents of coal gas in one stage without the preliminary removal of ammonia; or, in other words, to effect the direct oxidation of ammonium sulphide vapour. Air, coal gas, ammonia, and hydrogen sulphide were preheated and mixed in a reaction vessel, and from this vessel the mixture passed into the hot tube containing the catalyst. Most of the ammonium sulphate obtained solidified in this tube; the sulphite which the gases contained forming a very fine fume which was not absorbed by water in any form of bubbling apparatus or in a pumice tower 32 in. long. This difficulty, however, was eventually partially overcome.

The following catalysts were tried: Burnt pyrites, ferric oxide gel, alumina powder, soft alumina, alumina gel, bauxite, pumice, chromic oxide, and chromic oxide gel. Ferric oxide in any form is too active a catalyst in ammonia oxidation to permit its use for the desired reaction. It was found that pure ammonia was not oxidized at all on the ferric oxide catalyst between 200° and 300° C., although in presence of hydrogen sulphide at these temperatures oxidation is extensive and vigorous. Hydrogen sulphide accordingly acts as a promoter for the oxidation of ammonia on ferric oxide gel. The data obtained with alumina and with pumice proved not only that the ammonia is itself unoxidized by the catalyst, but also that it has no effect on the sulphur dioxide-trioxide equilibrium. Chromic oxide is an active catalyst for ammonia oxidation. Much water was formed, but no solid product.

The authors conclude that ammonium sulphide vapour can be quantitatively transformed to a mixture of ammonium sulphite and sulphate by atmospheric oxidation at temperatures of 450° to 650° C., in presence of a suitable catalyst. Alumina, best in the form of gel, is the most efficient catalyst for this reaction; but pumice can also be used. In all the experiments, the coal gas interfered seriously with the efficiency of the transformation. The products were smaller in amount, and much contaminated with tar; and therefore, although the oxidation of ammonium sulphide in presence of coal gas takes mainly the same course as with the pure gas, it does not run smoothly, and gives rise to troublesome bye-products.

It may be useful to note that the absorbent for hydrogen sulphide was lime slaked with a strong solution of ferric chloride, and made up into granules of convenient size. The absorbent is rapid and complete in its action, and gives excellent quantitative results when backed by a soda-lime tube to absorb the water liberated.

Will.—Mr. R. W. Wilson, a Director (and former Secretary) of the Imperial Continental Gas Association, left estate of the gross value of £4367, with net personalty £3983.

Fuel Research Board Report.—The report of the Fuel Research Board for 1925 has been issued by H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2, at the price of 1s. 3d. net. An early opportunity will be taken of noticing the report in the "JOURNAL."

The Electromobile Association.—The Rt. Hon. Brig.-Gen. Lord Montagu of Beaulieu, K.C.I.E., G.S.I., has granted the Association the honour of his election as the first President. In the "JOURNAL" for July 28, 1926, p. 188, there was explanation of how the Association concerned gas undertakings.

Gas Light and Coke Company's Reduction.—The Directors of the Gas Light and Coke Company are now in a position to make their first announcement of a reduction in the price of gas, which was temporarily increased owing to the coal stoppage. The full increase was 2·2d. per therm; and the first step in the return to normal prices will be a reduction of 1·4d. per therm (7d. per 1000 c.ft.), taking effect as from the reading of the meter indices in March next.

British Industries Fair—London Section.—We have received from the Secretary of the British Industries Fair a catalogue of the London Section. This catalogue—a full and detailed guide—has been published over six weeks before the opening date. This has been rendered possible by the eagerness of the British manufacturer to participate in the Fair, which has resulted in the booking of all available space. The Department of Overseas Trade are using every means to place this advance edition in the hands of overseas buyers in all countries.

Tar Conference Papers.—The papers that were presented before the Manchester Tar Conference in November last, together with the full discussion, will be published in bound form towards the end of this month, at a cost of 2s. 6d., post free. A limited number of copies will be available; and it is consequently advisable for those requiring them to apply at once to the General Secretary of the Society of Chemical Industry, Central House, Finsbury Square, London, E.C. 2. It was felt that the contributions proved so valuable that many of those interested would like to retain, for immediate reference, a complete account of what transpired at the conference.

Coke Handling at Dawsholm.—"The Iron and Coal Trades Review" for Dec. 10 contained a description, illustrated by a plan and photographs, of the coke handling plant at the Dawsholm Gas-Works of the Glasgow Corporation, which, it is remarked, is of special design and construction, and is operating successfully under novel and very exacting conditions—being, in fact, an excellent demonstration of the flexibility and possibilities of the belt conveyor. Previously coke was raised to the charging platform above the producers by two hoists, which delivered to bogie carriages travelling on a track the full length of the producer charging platform; the producers being arranged in parallel lines. With such a system, labour charges were naturally high; and in order to reduce these so far as possible, it was decided to instal a conveyor system. The plant had to be capable of handling up to 40 tons per hour; and had perforce to be welded into the arrangements and disposition of the existing plant. The work was entrusted to Messrs Stothert & Pitt, Ltd., Bath, who have installed a system of electrically-operated and controlled belt conveyors, which, while distinctly ingenious in conception, is entirely free from either mechanical or electrical complications, and is extremely simple in operation.

LEGAL INTELLIGENCE.

MR. GEORGE HELPS'S AFFAIRS.

The Official Receiver at Coventry has issued a summary of the debtor's statement of affairs in the matter of Mr. George Helps, Manor Court, Nuneaton, gas engineer. This shows gross liabilities amounting to £31,731 10s., of which £25,194 19s. 8d. is expected to rank for dividend, and £809 10s. 4d. for preferential treatment; the balance of £5727 being fully secured. The assets are estimated to produce £86,173; and after providing for the preferential claims, a surplus of £60,168 10s. is shown. The debtor attributes his present position to loss sustained by prosecuting an action against the Mayor, Aldermen, and Burgesses of the County Borough of Oldham, in respect of which judgment was given against him, with costs, on July 18 last.

In the course of a letter to the "Midland Daily Tribune," Mr. Helps says that agreements with him have been entered into by no less than 33 corporations and gas companies. These are in respect of certain new processes of gas manufacture, distribution, and application; and if the agreements are not to be "torn up," the shares in Pleno, Ltd., valued at present at par, will be worth two or three times par value, and his estate will show a surplus of a very considerable sum. On the other hand, if the agreements are "torn up," there will not be a single penny for any creditor. He has been advised by the best lawyers in the country; and they hold that the agreements are binding. As to his case against the Oldham Corporation, he points out that this occupied twenty-five days in the Courts, and three-and-a-half years before it got there, and cost close upon £20,000. "I intend," Mr. Helps says, "to continue to fight, not only for my rights, but for the rights of industrial and domestic gas consumers throughout this country to obtain the blessing that cheap gas will confer."

MISCELLANEOUS NEWS.

SIR DAVID MILNE WATSON'S MESSAGE.

In a message wishing all co-partners a very prosperous new year, which appears in the January issue of the Gas Light and Coke Company's "Co-Partners' Magazine," Sir David Milne Watson, D.L., LL.D., the Governor, says:

The year that has passed has been a testing one for the Company; and I am proud that we have weathered the storm so well. It is no mean achievement to have gone through seven months of coal stoppage without any interruption in the usual supply of gas, and it is a record of which the Company may justly be proud. I am very pleased that co-partners generally have risen to the emergency, and have spared no efforts to assist the Company to carry on successfully. I only hope that the public, who have short memories, will be mindful of what has been done.

The visit of the King and Queen to Beckton in July, and that of the Duchess of York to Church Street, Kensington, in October, were a great honour, and were noteworthy events in the Company's history, showing the appreciation in which our industry is held, and its vital importance to the community.

I am glad to notice how quickly the employees of the late Brentford Company, staff and non-staff, have fallen into line and settled down under their new conditions.

You will be glad to know that the Company's Bill of 1926 has become law. Amongst other things, it provides for a minimum dividend. This will be of advantage to co-partners generally; and the provision by which stock can be transferred in amounts of £1 will also be a benefit in enabling small savings to be invested.

There is a great deal of talk at the present time about a new spirit in industry. Societies and associations are being formed for the promotion of industrial peace. Societies and associations may do something, yet practice is better than precept; and if only employers and employed would settle down and work-out schemes such as our co-partnership, Sports Association, and other welfare schemes, it would be a far more practical way of solving the country's present difficulties, and better than exhorting each other about the desirability of peace in industry.

COLONIAL GAS ASSOCIATION, LTD.

The Thirty-Eighth Annual General Meeting of the Association was held in Melbourne on Oct. 6—Mr. P. C. HOLMES HUNT (the Chairman) presiding.

The CHAIRMAN, in moving the adoption of the report and accounts, said that each year witnessed an increase in the Company's business. Compared with the previous year, there had been an increase in the period under review in the amount of gas sold of nearly 36 million c.ft., equivalent to about 8·3 p.ct., with a corresponding gain in revenue. Owing to the substantial and steady increase in the consumption of gas in the eastern suburbs of Melbourne supplied by the Company—namely, Canterbury, Surrey Hills, and Box Hill—the Directors had thought it wise to purchase at Tunstall a site of 20 acres alongside the railway, suitable for the erection of gas-works. A further issue of preference and ordinary shares was over-subscribed. The reconstruction of the Footscray Works had, with the exception of one or two minor details, been completed; and the new Glover-West vertical retorts were working satisfactorily. Extensions in various other directions would call for more capital. An amalgamation, too, had been arranged with the Maitland Gas Light Company, Ltd. In the preceding year the Maitland undertaking sold about 50 million c.ft. of gas. A substantial proportion of the additional shares it was proposed to issue would be ear-marked in connection with this transaction. He referred to the satisfactory manner in which the Works Managers and office staff had carried out their duties during the year.

The report and accounts having been unanimously adopted, dividends were declared at the rates per annum of 8 p.ct. upon the preference shares and 9 p.ct. upon the ordinary shares; and it was decided that £4000 should be added to the reserve fund.

On the proposition of the CHAIRMAN, seconded by Mr. J. S. WEIR, the following resolution was agreed to:

> "That this Company sanctions an increase in the capital by the creation of 75,000 additional ordinary shares of £1 each, and of 25,000 additional 8 p.ct. preference shares of £1 each—such preference shares conferring on holders thereof the right to a preferential dividend out of the profits of the Company in each year at the rate of 8 p.ct. per annum, and sharing, as regards payment of dividend, equally with the existing preference shares of the Company, and as regards payment of capital equally with such last-mentioned preference shares and in priority to the ordinary shares."

The CHAIRMAN, acknowledging a hearty vote of thanks to the Directors and the staff, said they had a number of good Managers and an excellent staff. Some of the Works Managers, of course, had had bigger burdens to carry during the past twelve months than before. For instance, the Manager at Footscray (Mr. Parsons) had carried on particularly well with the reconstruction of that works. As to the staff at the head office, he referred particularly to the work of the Secretary (Mr. R. C. Shaw) and the Accountant, who were indefatigable in their labours for the Company.

New Holder at Montrose.—At Montrose, on Dec. 22, a new spiral guided gasholder of 500,000 c.ft. capacity, erected by the Barrowfield Iron-Works, Ltd., was brought into operation by the Chairman of the Company, Mr. David Smith.

INCREASES IN THE PRICE OF GAS.

The Bradford Corporation Gas Committee contracted an extra expense of £72,782 on coal as a result of the late strike. Under powers secured through the Gas Regulation Act, the Committee decided on an advance in the price of gas to 4s. 7d. per 1000 c.ft. to recoup this expense, but on the old basis of charging under the Bradford Corporation Act, 1871, the maximum permitted was only 4s. The maximum under the new Order is equivalent to 5s. 7d. per 1000 c.ft.; but the price recommended at present is only 11d. per therm (4s. 7d. per 1000 c.ft.).

The cost of coal used at the Chorley Gas-Works for a good part of 1926 was £6741 above normal. This was reduced to about £3500 by extra income from bye-products; but £2000 of the remainder will have to be recovered by an increase in the price of gas for the next three months.

In a report submitted to a meeting of the Gas Committee of the Edinburgh Town Council by Mr. H. H. Gracie, the Engineer and Manager, reference was made to the increased price of gas. The position, it was stated, now required to be further considered. The total extra cost for coal came to £162,000. After allowing for additional receipts from bye-products, it was estimated that there would be a deficiency of £61,000 in the revenue account; and it was therefore recommended that the price of gas to ordinary consumers be increased by 1·2d. per therm on and after the spring reading of meters, which commenced on Jan. 3. This would make the charge 10·8d. per therm (4s. 6d. per 1000 c.ft.). It was estimated that even with this advance there would be a deficiency at the close of the financial year.

DECISIONS ON THE GLASGOW GAS DEPARTMENT STRIKE.

In connection with the strike, which took place on March 20 last year (see "JOURNAL" for March 31, 1926, p. 826), of 600 employees of the Glasgow Corporation Gas Department, the Special Sub-Committee appointed to deal with the matter announced their decision at a meeting on Dec. 20.

They stated that no reasonable grounds existed for the complaints made by the individuals concerned against the management of the Gas Department; that the management were fully justified in their actings in the matters complained of; and that the said complaints pertained to matters which should and could have been adjusted between the management and the Trade Union representatives of the men concerned.

The Special Sub-Committee further agreed to recommend that in future any complaints or grievances by employees must first be submitted to the management through their Trades Union representatives, and that, failing a satisfactory settlement, the complaints be brought before the Gas Committee for their consideration.

NEW CARBONIZING PLANT FOR GLASGOW.

On Jan. 6 the Corporation of Glasgow agreed to the scheme of installing new plant at the Dawsholm Gas-Works at a cost of £245,000. A motion to defer decision, in order to give time for further consideration, was defeated.

The proposal was submitted in a minute of a meeting of the Committee on Gas Supply held on Dec. 21. The minute included the report of a deputation which had visited four of the most modern gas-producing plants in England. The view of the deputation was that the best scheme, of which an offer had been obtained, was one submitted by the Woodall-Duckham Company, Ltd., consisting of 44 continuous vertical retorts and 48 intermittent retorts to carbonize 587 tons of coal per day and make 9 million c.ft. of 475 C.V. gas. The Committee decided to recommend acceptance of the offer to instal this plant for £245,063, subject to a rise or fall in the market price of materials during the period of construction.

Testing Lung Capacity by a Gas Meter.—At the conclusion of a lecture to juveniles at the Royal Institution, Prof. A. V. Hill invited the audience to examine the apparatus with which he had been experimenting. Among the first to come forward was Sir Oliver Lodge, who was soon busily blowing through a rubber tube attached to a gas meter, in order to discover the capacity of his lungs. The gas meter was one of a number of instruments which Prof. Hill had used to illustrate his lecture.

Coal from a Sewage Works.—During the coal strike the fuel situation in Bradford was greatly eased by large supplies of coal being obtained from filter bed supplies at the Esholt Sewage Works. The Gas Committee have now been presented with the bill for this coal; and although the figure has not been stated officially so far, it is generally understood to be between £140,000 and £165,000. About 66,000 tons of the sewage works coal was taken for fuel (instead of for its intended purpose of filtering—a purpose served in most towns by clinker); and the Gas Committee have asked for a reduction in the price of 10 p.ct., because there was much water (from the filter beds) in the coal. The Sewage Committee decline to agree to the request, saying the coal was supplied at £1 per ton less than market price, and that therefore they have already given a concession of £66,000.

GAS REGULATION ACT APPLICATIONS.

SPECIAL ORDER.

Basingstoke Gas Company.

To extend the limits of supply so as to include the parishes of Wootton St. Lawrence, Church Oakley, Bramley, and Sherfield-on-Loddon, to authorize the raising of additional capital, &c.

DECLARATION OF CALORIFIC VALUE.

Bradford Corporation.—500 B.Th.U. (Jan. 11.)

GAS REGULATION ACT ORDERS.

There have been received from the Director of Gas Administration copies of the following Orders made by the Board of Trade under section 1 of the Gas Regulation Act.

Bradford Corporation.

After the declared date, the maximum price in respect of gas supplied by the undertakers shall be 13·4d. per therm.

After the declared date, "2d. per therm" shall be substituted for "10d. per 1000 c.ft." in the second proviso to section 36 (provision for sale of portion of gas undertaking to other local authorities) of the Bradford Corporation Act, 1900, and "1·6d. per therm" shall be substituted for "8d. per 1000 c.ft." in paragraph (5) of section 62 (application of Gas Company's Acts to Corporation) of the Bradford Corporation Act, 1902. (Dec. 29, 1926.)

Croston Urban District Council.

After the declared date (*a*) the maximum price in respect of gas supplied by the undertakers shall be 17d. per therm; (*b*) the price of 17d. per therm shall be substituted for the price of 5s. 6d. per 1000 c.ft. mentioned in Article XXIX. of the Croston Gas Order, 1888.

After the declared date, "13·4d. per therm" shall be substituted for "4s. per 1000 c.ft." in Article XXVII. of the Croston Gas Order, 1888. (Jan. 8.)

Gas Lectures at Halifax.—Under the auspices of the Halifax Corporation Gas Department, a series of public lectures and demonstrations on gas cookery and other domestic appliances is being given at the Gas Showrooms, Waterhouse Street, each afternoon and evening. The demonstrator is Miss Edith Sanderson, First Class Diplomée N.T.S.C., and Gold Medallist U.C.F.A.

ARGENTINA AND EDUCATION OF GAS EMPLOYEES.

On Dec. 17, Mr. P. A. Cooper (Chairman) and the Directors of the Primitiva Gas Company of Buenos Aires gave a luncheon at the Argentine Club to Sir Manuel Montes de Oca, G.B.E., the President of the Company's Local Committee in Buenos Aires. Among those present was the Governor of the Gas Light and Coke Company.

After luncheon, the party visited the Fulham Works of the Gas Light and Coke Company, principally for the purpose of inspecting the installation of Glover-West vertical retorts and the method of conveying coal to the works from ships discharging in the Thames.

Later the party visited Watson House, Battersea, to examine in detail the Gas Light and Coke Company's scheme for training fitters, &c., which is proving so successful in providing a constant stream of well-trained employees for the Company's service.

As an ex-Minister for Education in the Argentine Republic, Sir Manuel Montes de Oca was much interested in this scheme, realizing the advantages which accrue first to the young apprentices, who not only are trained thoroughly for their life's work, but whose general education is much improved, and, secondly, to the Gas Company, which secures a staff of efficient and well-educated employees.

Sir Manuel expressed himself as delighted with the technical and administrative efficiency which his visit to these sections of the Gas Light and Coke Company's undertaking had revealed to him; and on his return to Buenos Aires he will, at the request of the Board of Directors, initiate a comprehensive scheme of staff training for the Primitiva Gas Company.

At a meeting of the Ludlow Town Council on Thursday, Alderman J. Langley raised the question of the gas supply in the borough, and gave notice that, in view of the present conditions, he would move at the next meeting that a gas examiner be appointed, and that the whole question of gas lighting in the borough be referred to the Watch Committee. His proposal was approved.

When a Glasgow Corporation gas inspector called at 3, Parker Street, Whiteinch, on Nov. 30, he found in the meter 10s. 7d. in coppers, and twelve tin discs. The sequel to this was enacted at the Partick Police Court recently, when a prepayment consumer named John Ross was fined 10s. 6d., or five days' imprisonment, for stealing 216 c.ft. of gas valued at 1s. Ross, who had been warned before for inserting seven pieces of tin in the meter, said he was short of coppers at the time, and added that he owed the Corporation nothing.

EDUCATION IN THE GAS INDUSTRY.

Making Competent Craftsmen at Derby.

ENCOURAGING THE BOYS BY REWARD.

[See report in last week's issue, p. 38.]

Coun. J. Ferguson Bell, Engineer and General Manager of the Derby Gas Company, presenting 10s. notes to the Company's boys for regular attendance at lectures on gas apparatus. On the left of the picture are Mr. Harry Clark (Distribution Superintendent) and Mr. E. Jones (Chief Chemist).

TRADE NOTES.

Pulsometer Engineering Company.

An order has been placed by the London and North-Eastern Railway Company with the Pulsometer Engineering Company, Ltd., of London and Reading, for the supply, delivery, and erection of electrically driven hydraulic pressure pumps, return water pumps, meters, pipes, valves, &c., for their No. 1 pumping station at Alfred Street, Kingston-upon-Hull. The hydraulic pressure pumps will consist of four "Pulsometer" double unit turbine centrifugal pumps. Two of these will each be capable of delivering 800 gallons of water per minute against a total head equivalent to a pressure of 850 lbs. per sq. in (1960 ft.); the other two each being capable of delivering 600 gallons of water per minute against the same head. These pumps are arranged in two units, one at each end of a cast-iron baseplate, with the driving motor, suitable for a three phase, 50 cycles, 6000-6600 volts supply, between. The two return water pumps are each required to deliver 3000 gallons of water per minute against a total head of 44 ft. These pumps will be of a split casing centrifugal type, designed for low heads and high efficiency, and will each be direct coupled to an electric motor, suitable for three phase, 50 cycles, 400 volts supply. The whole of this pumping plant will be operated by air break automatic control gear. The extremely satisfactory working of the plant supplied by the Pulsometer Engineering Company to the Great Western Railway Company for their Cardiff Docks, which is of very similar capacity, and is also for a 6600 volts supply, has doubtless been the deciding factor in the placing of the present order.

DIARIES AND CALENDARS.

Continuing our references to the flow to this office of diaries, calendars, &c., prominence should be given to Charles Letts's Engineer's Diary, which is edited by Mr. J. E. Dodsworth, and is priced at 3s., or in refillable cover case 6s. Although in suitable size for pocket purposes, it is a veritable compendium of information which it is useful for an engineer to have with him. The diary embodies a list of professional institutions, followed by professional abbreviations. Then there are some forty tabulated statements on subjects which are the daily requirements of the engineer. In a foreword, Sir Robert Hadfield, Bart., F.R.S., makes reference to this tabulated work as follows: "No man wishes to overburden his brain in an effort to memorize details which can be stored in accessible form in books or tables of reference. Some are memorized unconsciously and without effort; but the wise man reserves his mental energies for the process of reasoning out those problems which he has to solve in his everyday business, or those discoveries which lie in the untrodden paths of knowledge. With his reference library for his serious work, the busy man has still a need for a few facts and figures in portable form and for ready reference. This little book has been prepared by my friend, Mr. Dodsworth, to fill this need, and a study of its pages will show that he has succeeded in doing so."

The Clay Cross Company (through their agents, Messrs. W. R. Silk & Co., of Broad Street House, Old Broad Street) have sent us their diary for the current year. Although small in size, it contains several interesting pictures showing the vast extent of the Company's operations. Glancing through its pages we also notice a list of some of the principal gas-works to which the Company have supplied their gas coals. Useful information for gas engineers is also contained in the engineering section of the diary—particularly in connection with the weights and dimensions of lamp columns.

The diary of the Stanton Iron-Works Company, Ltd., is a beautifully bound production, and incorporates in useful form much information concerning pipes, cylinders, bends, flanges, and so forth, of varying descriptions. No engineer connected with distribution work should be without this useful compilation.

We are indebted to the Koppers Coke-Oven Company, Ltd., of Glossop Road, Sheffield, for a desk "Printator" which we shall find of considerable use.

Further wall calendars have been received this week. One is from Messrs. Davison & Partner, Ltd., of Westminster, whose water-gas plants and waste-heat boilers are well known to the gas industry. Also one from the "Chemical Trade Journal and Chemical Engineer." A neat calendar, attractively coloured, has been sent by Messrs. Peckett & Sons, Ltd., of Bristol. On the back of the card is printed an amount of general information.

From Evesons (Coal), Ltd., of Birmingham, we have one of the best novelties in the way of a desk or wall calendar which has reached us this year. It belongs to what they term the "Magnet" series of calendars. The dates for a month appear on a perforated slip at the back of which is a plate. A red coloured removable frame encircles the date; and this frame makes magnetic contact through the perforations with a plate beneath, so that, by adjusting the magnetized frame, one has always the day's date clearly in view.

CONTRACTS OPEN.

Coal.

The Gas Department of the Skipton Urban District Council are inviting tenders for the supply of 5000 tons of gas coal. [See advert. on p. 99.]

The Ministry of Health have given sanction to the Bradford Corporation Gas Committee to borrow £50,000 for general purposes of the gas undertaking.

POSITIVE RECORD

GAS CALORIMETER

(Simmance's Patent)

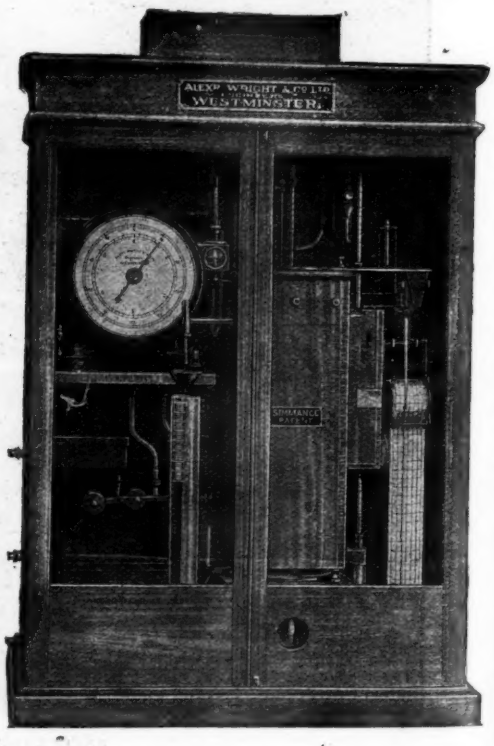
ACCURATE

No Water Troubles.

CERTAIN for a LONG RUN without attention.

A PERFECT TEST INSTRUMENT.
A PERFECT RECORDING MACHINE.
AN AUTOMATIC TESTER.

Maintenance Expense Avoided.



ALEXANDER WRIGHT & CO., Ltd., Westminster, S.W.1

Telephone: VICTORIA 1207. Telegrams: PRECISION, SOWEST, LONDON.

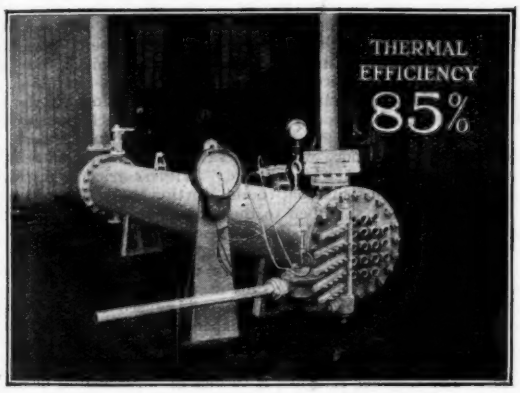
Recommend

KIRKE

PATENT GAS-FIRED SUPERHEATERS

for use with

TOWN GAS



Photograph of a Spencer-Bonecourt Kirke Patent Gas-Fired Superheater, fitted with Automatic Gas Regulator for maintaining a constant superheat on the steam.

By means of this Superheater–

ANY QUANTITY of steam can be superheated to ANY DESIRED TEMPERATURE ANYWHERE.

No matter what the superheating requirements are, they can be met by a Kirke Patent Gas-Fired Superheater.

Full details on request.

SPENCER-BONECOURT

LIMITED

ENGINEERS & BOILERMAKERS,

PARLIAMENT MANSIONS, VICTORIA ST., LONDON, S.W.1.

'Phone: VICTORIA 2802-3.

COAL TRADE REPORTS.

From Our Own Correspondents.

NORTH-EAST COAST.

Dismal conditions still prevail in the market, and prices continue on the down grade. Foreign shipments, purchased during the strike, are still arriving in considerable quantities, and are limiting the requirements of gas-works as regards Durham coals. This deficiency in the normal demand is naturally causing weakness in the market, and the Continent, watching the falling prices, is holding off for still lower levels.

The quantity of coal purchased from abroad during the stoppage but undelivered at its conclusion has occasioned general surprise, and has entirely upset the calculations of the coal trade. In addition to restricting the demand, it has been causing grave difficulty in the wagon position by tying up large numbers of trucks usually available for normal colliery working. It is now understood that coal imports will not be completed until about the end of February, so that a continuance of the present weak position must be anticipated until then. This implies the possibility of bargains being available for those who can take prompt cargoes from collieries temporarily short of trade, though sellers are looking for better times, and are not anxious to contract ahead at the lower figures.

Wear Special gas makes are nominally quoted at 20s. f.o.b., but lower prices than this are said to have been taken. Best qualities are available at 18s. to 19s. Second-class gas is nominally 17s. 6d. to 18s.; but one make is said to have been sold second-hand for export at 16s. 3d. f.o.b. Coking coals are the firmest spot at 18s. to 18s. 6d.; the demand in this section being better than any.

Gas coke is a falling market, and is no better than 28s. for export.

YORKSHIRE AND LANCASHIRE.

The coal markets in Yorkshire and Lancashire opened quietly, with indications of a slight discount in regard to general figures. House coals are normal. Industrial fuels did not commence at the figures anticipated.

Export is opening up gradually. Gas coals are in easy request; the indications being that figures previously given are rather below what would be paid in advance.

The following are the Humber bunker and export prices, f.o.b. usual shipping ports: South Yorkshire—Hards, Association, 23s. 9d.; washed doubles, 25s. to 26s.; washed singles, 23s. 9d. to 24s. 6d.; washed smalls, 15s. to 16s.; rough slack, 14s. 6d. to 15s.; smithy peas, 25s. 6d. to 27s. West Yorkshire—Hartleys (f.o.b. Goole), 21s. 6d. to 24s. 6d.; screened gas coal, 23s. 6d.; washed trebles, 27s. to 28s.; washed doubles, 22s. 3d. to 23s. 9d.; washed singles, 21s. 6d. to 23s. 6d.; washed smalls, 15s. 6d. to 16s.; unwashed doubles, 19s. to 19s. 6d.; coking smalls, 12s. to 13s. Derbyshire-Nottinghamshire—Top hards, 23s. to 24s. 6d.; washed doubles, 23s. to 24s.; washed singles, 22s. 6d. to 23s.; washed smalls, 14s. to 15s.; rough slack, 14s. Yorkshire, Derbyshire, and Nottinghamshire—Screened steam coal, 20s. to 21s.; gas coke, 32s. 6d.; furnace coke, 26s. to 27s. per ton.

MIDLANDS.

The subsidence of prices still proceeds; but it has slackened perceptibly. Many of the collieries state that the rates of wages which they are paying are not compatible with a return to the selling prices which prevailed before the upheaval. Industrial consumers in particular are determinedly taking up a position in opposition to this attitude. There is comparatively little contracting. The collieries that consent to do business on the basis of April prices are a small minority. The majority quote about 1s. 6d. to 2s. 6d. above the former level.

At pits which serve the house coal market there is great activity. The indications are that the output is going promptly into consumption, delays in the distributive channels having been overcome.

The fag ends of orders for gas coal from overseas are now being cleared up. Gas-works are getting regular deliveries from collieries at home under their old contracts. There is no occasion to consider further provision save in exceptional cases. Engineers whose requirements are insufficiently covered prefer to buy in small quantities at current rates, believing that conditions more favourable to them will develop as a basis for new contracts. Present quotations are 1s. 6d. to 2s. 6d. above the old contract prices.

The position has become more stringent as regards blast-furnace cokes. Smelters who contemplate re-starting furnaces are having difficulty in arranging for adequate deliveries of fuel. There is no advance corresponding to that reported from Cleveland, but quotations are very firm round 20s. at the ovens.

Stockport and the Coal Strike.—In a report by the Secretary to the Stockport Corporation Gas Committee on the activities of the Department during the recent coal strike, the welcome intimation is made that, to cover the increased costs incurred, no addition to the price of gas is necessary, nor will there be a debit balance to carry forward at the end of the financial year, provided the market for residuals remains good. The chief factors contributing to this satisfactory state of things are four months' stock of coal in hand, the improved consumption of gas per consumer, and the increased revenue from residuals. Sir Thomas Rowbotham (the Chairman of the Gas Committee), in moving the minutes of the Gas Committee in the Council, called attention to the report, and said that anyone who had read it carefully would see that the Gas Department, and especially the officers, had rendered very distinguished service to the town by the way in which affairs had been handled during that time. They began the year 1924 with 1000 tons of coal; but by a little wise foresight they had at the commencement of the strike 12,000 tons. They had to purchase quantities of American coal; but when they were able to get English coal at competitive prices, they purchased 11,560 tons.

RADIATION LTD.

Bonus Shares to be Issued.

A circular-letter has been addressed to the shareholders of Radiation Ltd., signed by the Chairman (Mr. H. James Yates), intimating that the Board have determined to call up the amount outstanding on the partly-paid shares, and also that at the meeting in March next the Directors will be prepared to recommend the capitalization of part of the accumulated profits, on the basis of making a free issue of one fully-paid ordinary share for every three fully-paid ordinary shares then held, including the present partly-paid shares, provided the calls now about to be made thereon are duly paid. The Board also anticipate being able to recommend the payment of a final dividend and bonus for the year ended Dec. 31, 1926, on the present paid-up ordinary capital equal to the final dividend and bonus paid for the year 1925.

Mr. Yates goes on to say: "The present position of the constituent Companies is very satisfactory, and has been brought about by the policy which the Board have pursued throughout for the deliberate purpose of conserving the Company's interests and insuring a financial position to avoid any serious fluctuation in dividends should the results of trading in any year prove unsatisfactory, and to enable these Companies to withstand any crisis which might arise in the industry. Shareholders who have been interested originally as holders in the constituent Companies and subsequently by the exchange of shares into this Company or the purchase of shares therein will realize that the formation of this Company is what I aimed at and worked to bring about for many years before it was actually accomplished, as I felt convinced that by the elimination of unnecessary competitive expenditure and by the 'pooling' of the brains, energy, and specialized experience of the principal concerns in the industries in which the constituent Companies are engaged, consolidation and considerable strength would be attained. Matters have developed as anticipated, with very satisfactory results; but it necessarily took several years to achieve the ends in view. . . . It is by reason of the conservative policy and intensive research work, and resulting industrial developments and manufacturing methods which have been pursued, that it is possible to make the above announcements. In effecting the capitalization contemplated, future prospects have not been lost sight of; and unless unforeseen and serious difficulties arise, it is anticipated that it will be possible to continue to pay dividends on the increased issued capital at the same rate as will be recommended for the year 1926. Shareholders, however, will appreciate that this will entirely depend upon trading results and upon the continuance of the policy hitherto pursued."

The Board have also in contemplation a scheme whereby the employees of the constituent Companies will have the opportunity of becoming shareholders in this Company on advantageous terms. Details as to this and the precise terms of any such offer are being carefully considered; and it is hoped to deal with this matter at the next annual general meeting.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *Jan.* 10.

There has been slightly more inquiry for tar products during the past week, and the price of pitch is called from 130s. to 140s. per ton net at makers' works.

Creosote remains at about 9¼d. net per gallon, f.o.b., and crystal carbolic acid is also unchanged, at about 6¾d. per lb.

The price of tar spirits remains as quoted last week.

Tar Products in the Provinces.

Jan. 10.

The markets for tar products have remained practically the same throughout the past week.

In regard to pitch, the material buyers, although there has been a drop in price, do not seem eager to make purchases.

The average values for gas-works products during the week were: Gas-works tar, 85s. 6d. to 90s. 6d. Pitch, East Coast, 115s. to 120s. f.o.b. West Coast—Manchester, 110s. to 115s.; Liverpool, 112s. 6d. to 117s. 6d.; Clyde, 115s. to 118s. Benzole, 90 p.ct., North, 1s. 9¾d. to 1s. 10¼d.; crude, 65 p.ct. at 120° C., 1s. 3d. to 1s. 4d., naked at makers' works; 50-90 p.ct., naked, North, 1s. 10¼d. to 1s. 11¼d. Toluole, naked, North 1s. 9d. to 1s. 10d. nominal. Coal-tar crude naphtha, in bulk, 9d. to 9¼d. Solvent naphtha, naked, North, 1s. 7d. to 1s. 8d. Heavy naphtha, North, 1s. 1d. to 1s. 2d. Creosote, in bulk, North, liquid, 8¼d. to 8¾d.; salty, 8d. to 8¼d.; Scotland, 8d. to 8¼d. Heavy oils, in bulk, North, 8¾d. to 9d. Carbolic acid, 60 p.ct., 1s. 9¼d. to 1s. 10¼d. prompt. Naphthalene, £11 to £14; salts, 100s. to 110s., bags included. Anthracene, "A" quality, 2¼d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

An article which recently appeared in "El Mercurio" describes the plant at the Valparaiso Gas-Works. The works have been completely modernized; the last item of plant to be installed being a telpher for removing coke from the retort house to the screens. Manual labour for coal and coke handling has been eliminated; everything now being done by machinery.

There will be an interesting gathering at the Greenbank Gas-Works, Blackburn, in March, to mark the completion of further plant to meet the increased demand for gas in the borough. A new holder and carburetted water gas plant will be formally inaugurated by Councillor E. Hamer (the Chairman of the Gas Committee). At the same time an exhibition of gas appliances, extending over eleven days, will be opened in the Artillery Barracks, King Street.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Dec. 31.]

Nos. 32,729—33,094.

COMBUSTION UTILITIES CORPORATION.—"Purification of tar oils." No. 32,978.

EVANS, W. E.—"Distillation of carbonaceous substances." No. 33,092.

GAERTNER, A.—"Distilling coal." No. 32,862.

KOHLENVEREDLUNG AKT.-GES.—See Evans, W. E. No. 33,092.

PEEBLES, W. C., and PEEBLES & Co., LTD.—"Governing device." No. 33,000.

SIMPSON, J. F.—See Peebles, W. C., and Peebles & Co., Ltd. No. 33,000.

SMITH, E. W., and SMITH METERS, LTD.—"Valves for prepayment gas meters." No. 32,788.

TULLY, S. J. B.—"Manufacture of gas for heating, &c." No. 33,077.

YEO, O. E.—See Tully, S. J. B. No. 33,077.

Belfast Gas-Works Fatality.

At the inquest on Alexander Martin (56), an employee at the Belfast Gas-Works, who died from burns when working on the retorts on No. 3 floor, Mr. J. D. Smith, the General Manager, said that at the time of the occurrence, owing to the coal strike they were forced to import cargoes of foreign coal. To counteract possibility of an accident, he reinforced the staff both night and day. The stock had fallen to about four days' supply, and they had no option but to use foreign coal of poor quality, with which they were unacquainted. Francis Hopkins, who was working with deceased at the time, said he heard a hissing noise; and they were immediately enveloped in flame. Witness was temporarily blinded, but made his way to the hoist, where he saw Martin with his clothes on fire. Robert Ballentine, boilerman, said he was on the floor at the same level as the top of the retorts, when he noticed a back pressure from one of the retorts, and a burst of flame. He heard moans, and hurried to the next floor, where he saw the previous witness and deceased, whose clothes were on fire. Witness tried to extinguish the flames by wrapping his coat round Martin, but was unsuccessful; and he then took the two men to the bottom of the hoist, where he pulled the burning clothes off the deceased, and put the flames out. James Hyslop, Assistant Technical Engineer, said the rush of gas was due to the movement of coal in the retort giving rise to a rapid evolution of gas. The pipe was shut at the time of the occurrence; and the gas, forcing its way to the top, caused a large flame to ascend to the platform. In all his experience, said witness, he had never encountered such an occurrence before. The coal which was being consumed was Silesian, and was probably the cause of the accident. The Coroner returned a verdict of "Accidental death."

Bilston Gaslight and Coke Company.—The annual report of the Company shows a credit balance of £14,828; and at the recent annual meeting it was agreed that dividends be paid of 5s. 6d. per share on the "A" shares, less tax, and 4s. per share on the "B" shares, less tax (making, with the interim dividends paid in July last, 11s. and 8s. per share respectively). This leaves a balance of £12,680. The Chairman, Mr. Harold Holcroft, thought the results highly satisfactory, having regard to the difficult conditions through which the Company had passed.

Irish Gas Prices.—The Ballymena Urban District Council have decided that a memorial praying for a Provisional Order be signed and forwarded to the Ulster Home Office, to enable the Council to increase the price of gas from 7s. 6d. to 10s. per 1000 c.ft. The Enniskillen Gas Company have made application to the Ulster Ministry of Commerce for a renewal of permission to charge a maximum price of 9s. per 1000 c.ft. for their gas. The Town Clerk, by direction of his Council, has intimated to the Ministry that, in their opinion, the price should be reduced.

New Preference Shares for Grays and Tilbury.—Messrs. A. & W. Richards are, on behalf of the Directors, offering for sale by tender 2000 £10 6 p.ct. irredeemable preference shares in the Grays and Tilbury Gas Company; the minimum price of issue being par. The Company supply a large area, and are enjoying a constant growth of business. The output of gas for the first three quarters of 1926 showed an increase of over 12 p.ct. when compared with the corresponding period of the previous year. Tenders are required to be sent to Messrs. Richards, at 37, Walbrook, London, E.C. 4, not later than Friday morning, Jan. 21.

Price of Gas at Blackburn.—In a paragraph which appeared on p. 40 of last week's "JOURNAL," it was stated that in 1921, during the coal strike of that year, the price of gas was increased to 4s. 10d. per 1000 c.ft. It should have been said that the price was allowed to remain at 4s. 10d.; so that in both the strikes the Department made no advance—a matter of gratification to the consumers and management. Councillor E. Hamer (the Chairman of the Gas Committee), referring in the Town Council to the decision not to increase the price of gas on the present occasion, said they had gone through a serious strike; and the average cost to the Department of coal was 57s. a ton, against 25s. a ton in the previous year, the total extra cost being £47,000. They had had an extraordinary consumption of gas and sale of gas appliances; and taking everything into consideration, they felt it would be better to refrain from increasing the price of gas at present, and so had decided to leave the matter until the end of the financial year. Great credit was due to their Gas Engineer (Mr. G. P. Mitchell) and staff for the way in which they had controlled the Department during the strike.

STOCK MARKET REPORT.

THE closing, prior to the published date, of the lists for cash applications of the new 4 p.ct. Consols was perhaps the outstanding feature of the week financially. The success of the issue led to a marked improvement in gilt-edged stocks, particularly Conversion and Funding Loans. Apart from further advances in Corporation scrips, however, no material change occurred in other investment stocks.

The condition of affairs in China was a depressing influence; and notwithstanding the more reassuring views at the end of the week, Chinese Loans were pressed for sale, and further depreciation was recorded. Prices of other Foreign stocks—such as Bulgarian scrip, Greek "Sevens" and Perus—also declined. French Rentes were easier on the small setback of the franc early in the week.

Although business was restricted before the carry-over, the Industrial market developed strength in various directions. Newspaper issues were prominent. Tobaccos, excepting perhaps Carreras, were weak on the anticipated additional taxation. Home Rails were inactive; and the decline in the transactions is possibly due to the hope of better results consequent on the approval of the new rate schedules. Oils were particularly strong; and there was a sharp rise in Shells on higher dividend prospects.

Gas Stocks remained firm and are difficult to obtain; any parcels available being speedily absorbed. It is true that quotations show little improvement, but purchases have to be made at the highest prices.

The following transactions were recorded during the week:

On Monday, British 105⅜, Gas Light and Coke 86¼, 86⅜, 86⅞, 87, 4 p.ct. preference 76¼, 77, 3 p.ct. debenture 58½, Primitiva 14s., 14s. 1½d., 14s. 3d., South Metropolitan 94¼, 95, 3 p.ct. debenture 58. Supplementary prices, Croydon 6 p.ct. debenture 100¼, Gas Light and Coke 5 p.ct. debenture (Sept. 1) 99¼.

On Tuesday, Bournemouth 7 p.ct. "B" 12⅛, 12⅜, Gas Light and Coke 86¼, 86½, 86⅝, 86⅞, 87, Primitiva 14s. 3d., South Metropolitan 94¼, 95, South Suburban 5 p.ct. 98⅞. Supplementary prices, Croydon 6 p.ct. debenture 98½.

On Wednesday, Bournemouth 6 p.ct. preference 11¼, Commercial 4 p.ct. 81, 81¼, 81½, 3½ p.ct. 80½, Gas Light and Coke 86⅜, 86⅝, 86⅞, 87, 87¼, 3½ p.ct. maximum 60⅝, 4 p.ct. preference 76¼, Imperial Continental 130, 131½, Primitiva 14s. 1½d., 14s. 3d., 14s. 4½d., South Metropolitan 94¼, 95, 3 p.ct. debenture 58⅞, 59, South Suburban 5 p.ct. 99, 5 p.ct. debenture 93½, Wandsworth, Wimbledon 5 p.ct. 101½. Supplementary prices, Hornsey 4 p.ct. debenture 71½, Liverpool 5 p.ct. 79, 79⅛.

On Thursday, Bombay 21s. 3d., Bournemouth 7 p.ct. "B" 12⅛, 12⅜, Brighton and Hove "A" (7 p.ct. stand.) 128½, Commercial 4 p.ct. 81, 3½ p.ct. 80, Croydon sliding-scale 98, 99, Gas Light and Coke 86⅜, 87¼, 4 p.ct. preference 76, 77, Imperial Continental 131½, 132, Lea Bridge (5 p.ct. stand.) 95, Newcastle (3½ p.ct. stand.) 70⅜, Primitiva 14s. 2½d., 14s. 4½d., 4 p.ct. cons. debenture 69½, 70, South Metropolitan 94⅜, 95¼, South Suburban 5 p.ct. 98½. Supplementary prices, British 3½ p.ct. debentures (Hull) 60½, 62, Lea Bridge 7 p.ct. debenture 101.

On Friday, Alliance and Dublin 82, Bombay 21s. 7½d., Bournemouth "B" 7 p.ct. 12⅜ and £12 13s. 6d., British 106, Commercial 4 p.ct. 81½, 3 p.ct. debenture 55½, European 6¼, Gas Light and Coke 86⅜, 86⅞, 3 p.ct. debenture 59½, Imperial Continental 131½, 132½, 133, Lea Bridge (5 p.ct. stand.) 95⅜, Primitiva 14s., 14s. 1½d., 14s. 3d., 14s. 4½d., South Metropolitan 94⅜, 95, 6½ p.ct. debenture 101¼, 102. Supplementary prices, Lea Bridge 7 p.ct. debenture 101¼, Tottenham 6 p.ct. Mts. 98, 98½.

In Lombard Street there were definite signs of a change in the position of the short loan market. While fresh money could at one time be obtained at as low as 3 p.ct., the excessive ease which has of late prevailed is drawing to a close, and it is anticipated that higher rates will have to be paid during the current week. The Treasury Bill average rate was below the market estimate; and this rate—£4 6s. 5·43d. p.ct., over 3s. 1d. p.ct. below that of the previous week—is the lowest since the end of July last year. Discount quotations improved towards the close.

In the Foreign Exchange Market, both Sterling on New York and French francs, which had depreciated earlier in the week, firmed up subsequently. The former finished at 4.85$\frac{13}{32}$, and the latter at 122.80. The German exchange moved in favour of this country, and closed at 20.44½. The Milan rate rose slightly to 100$\frac{5}{16}$. Belgas gave way to 34 80½.

Silver was again a quiet market, and the price declined to 24$\frac{15}{16}$d. per oz. Gold, in the absence of operations, remained nominally at 84s. 11½d. per oz.

The Bank Rate is 5 p.ct., to which it was raised from 4 p.ct. on Dec. 2, 1925. Bankers' deposit rates are 3 p.ct. The deposit rates of the discount houses are 3 p.ct. at call and 3½ p.ct. at notice.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr	Dividends. Last Hf. Yr.	NAME.	Quotations. Jan. 7.	Rise or Fall on Week.	Transactions. Lowest and Highest Prices.
£			%p.a.	% p.a.				
171,978	Stk.	Aug. 12	5	5	Aldershot 5 p.c. max. C. .	72—75	..	..
322,992	,,	,,	4	4	Do. 4 p.c. Pref. .	67—72	..	..
1,551,868	,,	Sept. 30	6½	6½	Alliance & Dublin Ord. .	80—85	−1	82
374,000	,,	July 8	4	4	Do. 4 p.c. Deb. . .	67—70	..	..
300,000	1	Oct. 14	1/7½	1/7½	Bombay, Ltd.	1—1½	..	21/3—21/7½
170,000	10	Aug. 26	8½	8½	Bournemouth 5 p.c. . . .	12—13	..	..
500,050	10	,,	7	7	Do. B 7 p.c. . .	12—13	..	12⅜—12⅝
275,000	10	,,	6	6	Do. Pref. 6 p.c. .	11—12	..	11¼
50,000	Stk.	June 24	3	3	Do. 3 p.c. Deb. .	54—57	..	..
162,025	,,	,,	4	4	Do. 4 p.c. Deb. .	74—77	..	..
214,740	,,	Aug. 26	12	12	Brighton & Hove Orig. .	163—168	..	..
244,200	,,	,,	9	9	Do. A Ord. .	125—130	..	128½
1,287,500	,,	July 22	5	5	Bristol 5 p.c. max. . . .	84½—85½a	..	..
855,000	,,	Sept. 30	7	8	British Ord.	102—107	..	105¾—106
100,000	,,	Dec. 30	7	7	Do. 7 p.c. Pref. . .	112—117*	..	..
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	68—73*	..	..
100,000	10	Dec. 9	8	6	Cape Town, Ltd. . . .	7—8	..	..
100,000	10	Oct. 28	4½	4½	Do. 4½ p.c. Pref. . .	6—7	..	..
150,000	Stk.	Dec. 30	4½	4½	Do. 4½ p.c. Deb. . .	68—73*	..	..
626,860	,,	July 22	6	6	Cardiff Con. Ord. . . .	97—100	..	..
237,860	,,	Dec. 30	7½	7½	Do. 7½ p.c. Red. Deb. .	100—103*	..	..
157,150	,,	Aug. 12	6½	5	Chester 5 p.c. Ord. . . .	89—94b	..	..
79,185	1	Sept. 30	†2/-	†2/-	Colombo Ltd. Ord. . . .	27/—29/-	..	..
24,495	1	,,	1/4‡	1/4‡	Do. 7 p.c. Pref. .	20/—22/-	..	..
321,490	1	Oct. 14	1/9‡	1/7½	Colonial Gas Assn. Ld. Ord.	25/—27/-	..	..
173,900	1	,,	1/9‡	1/7½	Do. 8 p.c. Pref.	21/—23/-	..	..
1,513,280	Stk.	Aug. 1	5½	5½	Commercial 4 p.c. Cap. .	79—82	..	81—81½
660,000	,,	,,	5/8/4	5/8/4	Do. 3½ p.c. Cap. .	78—81	..	80—80½
475,000	,,	Dec. 30	3	3	Do 3 p.c. Deb. .	54—57*	..	55½
800,000	,,	Sept. 30	§2	§1	Continental Union, Ltd. .	27—32	..	..
200,000	,,	,,	7	7	Do. 7 p.c. Pref. .	82—85	..	..
737,150	,,	Aug. 12	6½	6½	Croydon sliding scale . .	96—99	..	98—99
403,100	,,	,,	5	5	Do. max. div. . . .	78—81	..	..
492,270	,,	Aug. 26	9	6	Derby Con.	107—109e	..	..
55,000	,,	Dec. 30	4	4	Do. Deb.	73—75e*	..	..
209,000	,,	Sept. 16	5	5	East Hull Ord. 5 p.c. . .	78—82	..	..
50,000	,,	Dec. 30	5	5	Eastbourne 5 p.c. Deb. .	90—95*	..	..
1,002,180	10	Sept. 30	†4	†3	European, Ltd.	6½—7½	..	6½
18,788,960	Stk.	Aug. 12	4/17/4	5/1/4	Gas Light & Coke 4 p.c. Ord.	86—88	+1	86½—87½
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max. . . .	58—61	..	60⅜
4,157,920	,,	,,	4	4	Do. 4 p.c. Con. Pref. .	74—77	..	76—77
5,602,620	,,	Dec. 30	3	3	Do. 3 p.c. Con. Deb. .	57—60*	..	59½
181,315	,,	,,	—	6	Do. 6 p.c. Br'tf'd Rd. Db.	100—105*	..	..
180,000	,,	—	10	10	Do. 10 p.c. Bonds. . .	..	..	..
42,000	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb. .	..	..	..
82,500	,,	Aug. 26	6⅜	6⅜	Hastings & St L. 5 p.c. Conv	87—92	..	..
258,740	,,	,,	5⅜	5⅜	Do. 3½ p.c. Conv.	66—71	..	..
70,000	10	Oct. 14	†10	†10	Hongkong & China, Ltd. .	14½—15½	..	..
173,200	Stk.	Sept. 16	5	5	Hornsey Con. 3½ p.c. . .	69—71	..	..
1,976,000	,,	Nov. 11	‡10	10	Imperial Continental Cap.	130—133	+1	130—133
226,170	,,	Aug. 12	3½	3½	Do. 3½ p.c. Red. Deb.	68—71	..	..
235,242	,,	Aug. 12	6½	6½	Lea Bridge 5 p.c. Ord. . .	94—99	..	95—95⅜
2,127,840	,,	Aug. 12	5½	5½	Liverpool 5 p.c. Ord. . .	79—80b	..	..
600,000	,,	Sept. 30	7	7	Do. 7 p.c. Red. Pref.	102—105b	..	..
165,786	,,	Aug. 26	8	9	Maidstone 5 p.c. Cap. . .	112—117	..	..
63,480	,,	Dec. 30	3	3	Do. 3 p.c. Deb. . .	52—57*	..	..
75,000	5	Dec. 9	†7	†7	Malta & Mediterranean .	5½—5⅝*	..	..
541,920	Stk.	Nov. 25	†6	†5	Montevideo, Ltd. . . .	79—82	..	..
2,061,315	,,	Aug. 12	5	5	Newcastle & Gateshead Con.	71½—72	..	..
360,929	,,	,,	4	4	Do. 4 p.c. Pref. .	73—74d	..	..
639,708	,,	Dec. 30	3½	3½	Do. 3½ p.c. Deb. .	67⅜—68¼*	..	..
15,000	,,	Aug. 26	11½	11½	North Middlesex 10 p.c. .	155—160	..	..
91,530	,,	,,	8⅝b	8⅝b	Do. 7 p.c. .	109—114	..	..
800,000	,,	Nov. 25	7	9	Oriental, Ltd.	97—102	..	..
188,120	,,	Dec. 30	7½	7½	Plym'th & Ston'house 5 p.c.	105—110*	..	..
414,500	,,	Aug. 26	—	7/4/0	Portsm'th Con. Stk. 4p.c. Std.	102—107	..	..
236,782	,,	,,	—	5/0/0	Do. 5 p.c. max.	78—81	..	..
2,289,909	1	—	—	—	Primitiva Ord.	13/9—14/9	+/3	14/—14/4½
282,200	100	Dec. 1	4	4	Do. 4 p.c. Red. Deb. . .	84—86	..	..
600,000	Stk.	July 22	4	4	Do. 4 p.c. Red. Deb. 1911	70—72	..	..
434,968	,,	Dec. 30	—	4	Do. 4 p.c. Cons. Deb. . .	69—71	+1	69½—70
150,000	10	Sept. 30	6	6	San Paulo 6 p.c. Pref. . .	7½—8	..	..
125,000	50	July 1	5	5	Do. 5 p.c. Red. Deb.	47—50	+1	..
270,000	Stk.	Sept. 16	6	5½	Sheffield A	96—98e	..	..
419,998	,,	,,	6	5½	Do. B	96—98e	..	..
1,047,000	,,	,,	6	5½	Do. C	96—98e	..	..
90,000	10	June 11	4	—	South African	4—6	..	..
3,609,895	Stk.	Aug. 12	7	5	South Met. Ord.	94—96	+½	94½—95½
1,896,445	,,	July 8	3	3	Do. 3 p.c. Deb. . .	57—60	..	58—59
734,000	,,	Sept. 16	6½	6½	Do. 6½ p.c. Red. Db.	100—102	..	101½—102
91,500	,,	Aug. 12	8½	8½	South Shields Con. . . .	114—116d	..	..
1,187,795	,,	Aug. 12	6½	6½	South Suburban Ord. 5 p.c.	97—100	+1	98½—99
368,897	,,	Dec. 30	5	5	Do. 5 p.c. Deb.	93 96*	..	93½
647,740	,,	Oct. 14	5	5	South'mpton Ord. 5 p.c. max.	75—78	..	..
121,275	,,	Dec. 30	4	4	Do. 4 p.c. Deb.	68—73*	..	..
250,000	,,	Aug. 26	7	7	Swansea 7 p.c. Red. Pref. .	100—102	..	..
200,000	,,	Dec. 30	6½	6½	Do. 6½ p.c. Red. Deb.	100—103*	..	..
120,000	,,	July 22	7⅜	7⅜	Tottenham District A 5 p.c.	105—110	..	..
882,275	,,	,,	5½	6½	Do. B 3½ p.c.	88—91	..	..
150,000	,,	,,	5½	5½	Do. 5½ p.c. Pref.	99—101	..	..
181,365	,,	Dec. 9	4	4	Do. 4 p.c. Deb.	72—75*	..	..
358,351	,,	Aug. 26	5	5	Tynemouth Con. and New Uxbridge, Maidenhead, & Wycombe 5 p.c. . . .	69½—70½d	..	..
197,555	,,	Aug. 26	6⅝	6½	Do. 5 p.c. pref. .	85—90	..	..
88,230	,,	,,	5	5	Do. 5 p.c. Maidenh'd	80—85	..	..
91,800	,,	,,	6⅝	6½	Wandsworth, Wimbledon, and Epsom—	85—90	..	..
30,000	,,	July 8	8½	8½	Wandsworth A 5 p.c. .	122—127	..	..
255,630	,,	,,	7	7	Do. B 3½ p.c. .	102—107	..	..
412,440	,,	,,	5/19/0	5/19/0	Do. C and New	88—93	..	..
852,000	,,	,,	6⅝	6⅝	Wimbledon 5 p.c. . . .	98—103	..	101½
98,000	,,	,,	7½	7½	Epsom 5 p.c.	104—109	..	..
88,416	,,	Dec. 30	3	3	3 p.c. Deb.	54—57*	−1	..

Quotations at:—a.—Bristol. b.—Liverpool. c.—Nottingham. d.—Newcastle. e.—Sheffield. *Ex. div. † Paid free of income-tax. ‡ Plus 8½ p.ct. p.a. special dividend. § For year.

For NOTICES TO CORRESPONDENTS, ADVERTISERS, AND SUBSCRIBERS

See "JOURNAL," January 5, p. 42.

Telegrams: "GASKING, FLEET LONDON." Telephone: Central 6055.

Subscribers who desire to avail themselves of the reduction in the Subscription by paying in advance for the current Year are reminded that this can only be done before the end of January.

GAS PURIFICATION & CHEMICAL CO., LTD.,
PALMERSTON HOUSE,
34, OLD BROAD STREET, LONDON, E.C. 2.

OXIDE OF IRON
AS SUPPLIED BY THIS COMPANY FOR OVER 50 YEARS ON SALE OR LOAN.

SPENT OXIDE
PURCHASED IN ANY DISTRICT.

(*Telegrams:* "PURIFICATION STOCK, LONDON." *Telephone:* LONDON WALL, 9144.

PATENTS, Trade Marks, Inventions Advice, Handbook and Consultations free. KING'S PATENT AGENCY LTD., Director B. T. KING, C.I.M.E., Regd. Patent Agent, G.B., U.S., and Can., 146A, QUEEN VICTORIA St., E.C. 4, and 6, QUALITY CT. (next Pat. Off.), LONDON, W.C. 40 years' refs. 'Phone Cent. 682.

WEIGHBRIDGES

FOR Motor Lorries and Railway Traffic can be seen erected at our works READY FOR DELIVERY. Inspection by your Engineer invited and a test by your Local Inspector of Weights and Measures before delivery. Every machine a High-Class Engineering Product and fully guaranteed.
CHARLES ROSS, LIMITED, SHEFFIELD.

SULPHURIC ACID.

SPECIALLY prepared for the manufacture of SULPHATE OF AMMONIA.
SPENCER CHAPMAN & MESSEL, LTD.,
with which is amalgamated WM. PEARCE & SONS, LTD., 36, Mark Lane, LONDON, E.C. Works—SILVERTOWN.
Telegrams—"HYDROCHLORIC, FEN, LONDON."
Telephone—ROYAL 1166.

GEORGE WILSON GAS METERS, Ltd.
for
GAS-METERS, ORDINARIES, SLOTS, AND REPAIRS,
Foleshill Road, COVENTRY.
Telephone: 596. Telegrams: "GASMETER,"
and at 268, Stockport Road, MANCHESTER.
Telephone: RUSHOLME 976. Telegrams: "GASMETER,"
and 46 & 47, Auckland Street, LONDON, S.E.11.
Telephone: HOP 647. Telegrams: "GASEOUS LAMB."

J. E. C. LORD (Manchester), Ltd., Ship Canal Tar Works, Weaste, Manchester. Pitch, Creosote, Benzols, Toluol, Naphtha, Pyridine, all kinds of Cresylic Acid, Carbolic Acid, &c.

SULPHATE OF AMMONIA SATURATORS and all LEAD and TIMBER WORK in connection with Sulphate Plants.
We Guarantee promptness with efficiency for Repairs.
JOSEPH TAYLOR (SATURATORS), LTD., Chemical Plant Engineers, Blackhorse Street Mills, BOLTON.
Telegrams—"SATURATORS, BOLTON." Telephone 848.

"LUX" PURIFYING MATERIAL.

THE PREMIER MATERIAL FOR GAS PURIFICATION.

THOS. DUXBURY AND CO.
SOLE AGENTS FOR
ENGLAND, SCOTLAND, IRELAND, WALES AND THE COLONIES (except CANADA).

16, DEANSGATE, MANCHESTER.
Telegrams: "Darwinian, Manchester."
Tel. Nos.: 8308-9 City.

PALACE CHAMBERS, WESTMINSTER, S.W.1.
Telegrams: "Darwinian, Parl, London."
Tel. No.: 0978 Victoria.

J. & J. BRADDOCK (Branch of Meters Limited), Globe Meter Works, OLDHAM, and 45 & 47, Westminster Bridge Road, LONDON, S.E. 1.
WET AND DRY GAS METERS, PREPAYMENT METERS, STATION METERS AND GOVERNORS.
REPAIRS RECEIVE PROMPT ATTENTION.
Telephones: 215, Oldham, and 2412 Hop, London.
Telegrams—
"BRADDOCK, OLDHAM," and "METRIQUE, LAMB, LONDON."

MEWBURN, ELLIS, & CO.,
CHARTERED PATENT AGENTS AND
TRADE MARK AGENTS,
70 & 72, Chancery Lane, London, W.C. 2.
Telegrams: "Patent, London." Phone 243 Holborn.
And 3, St. Nicholas Buildings, Newcastle-on-Tyne.

THE BRITISH GAS PURIFYING MATERIALS CO., LTD.,
99, LONDON ROAD, LEICESTER.
Telegrams: "BRIPURIMAT, LEICESTER." Telephone: LEICESTER 5096.
Solicit enquiries for:—
NATURAL BRITISH PURIFYING MATERIAL,
NATURAL HYDRATED OXIDE OF IRON,
FIRST QUALITY DUTCH BOG ORE,
BEST QUALITY BELGIAN BOG ORE,
"PREPARED" AND "UNPREPARED" ARTIFICIAL OXIDES.
SPENT OXIDE PURCHASED.
LONDON OFFICE:
34/35, NORFOLK STREET, STRAND, W.C. 2.
Telegrams: "BRIPURIMAT ESTRAND LONDON." Telephone: CENTRAL 4545 & 4546.

LESLIE ALLAN & CO., LIMITED,
RAINFORD WORKS, RAINFORD, LANCS.
BUYERS OF
CRUDE TAR. Any quantity.
Co-operative Distillation Schemes.
Sliding Scale Contracts. Fixed Price Contracts.

HUTCHINSON BROTHERS, Ltd.,
FALCON WORKS, BARNSLEY.
MANUFACTURERS OF
GAS METERS (Ordinary and Slot).
"FALCON" INVERTED LAMPS,
SQUARE STREET LANTERNS,
SUPERHEATER BURNERS, and
CONVERSION SETS for Street Lanterns.

APPOINTMENTS, &c., VACANT.

WHEN Filling Vacancies, please REMEMBER THE CLAIM OF THE EX-SERVICE MAN, who, other Qualifications being equal, HAS THE FIRST CALL ON YOUR CONSIDERATION.

WANTED, by Lancashire firm of Coal Factors, First Class SALESMAN for Gas, House, and Industrial Fuels for West and South of England. Must be fully experienced and conversant with Yorkshire, Derbyshire, and other Midland qualities, and capable of introducing new business. Remuneration, Salary, and Commission.
Address, stating Experience, &c., No. 7705, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C. 4.

GAS METER Makers having a Connection in Scotland require a REPRESENTATIVE on Commission.
Address No. 7707, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C. 4.

CHIEF Draughtsman required by the Wandsworth, Wimbledon, and Epsom District Gas Company. Applicants must be under 45 years of Age, Fully Qualified, and Experienced in the Design and Construction of all Gas-Works Plant, Buildings, Setting Out, &c.
Applicants should state Salary required, and give two recent References.
Applications should be addressed to the CHIEF ENGINEER, FAIRFIELD STREET, WANDSWORTH, and marked "Private."

OXIDE OF IRON.
SPENT OXIDE BOUGHT.
BALE & CHURCH, LTD.,
33, ST. MARY AT HILL, LONDON, E.C. 3.
Phone: Royal 1484.

"TORTO" FIRE CEMENT.
BALE & CHURCH, LTD.,
33, ST. MARY AT HILL, LONDON, E.C. 3.
Phone: Royal 1484.

"KLEENOFF," THE COOKER CLEANSER.
Tins for Sale to Consumers.
In Bulk for Works Use.
(*See "Gas Salesman"* (*December* 29), *p.* 290.)
BALE & CHURCH, LTD.,
33, ST. MARY AT HILL, LONDON, E.C. 3.
Phone: Royal 1484.

SULPHURIC ACID.
JOHN RILEY & SONS, Limited, Chemical Manufacturers, Hapton, near Burnley, are MAKERS of Special SULPHURIC ACID ("Eagle" Brand), for Sulphate of Ammonia Making. Highest percentage of Sulphate of Ammonia obtained from the use of this Vitriol, which has now been used for upwards of 60 years. Reference given to Gas Companies.

APPOINTMENTS, &c., WANTED.

FIRST Class Man requires Position as DISTRIBUTION SUPERINTENDENT or FOREMAN. Good Interviewer, capable Estimator, wide Practical Experience all Branches. Will Interview Managers anywhere. At liberty now. Excellent References.
Address, No. 7708, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C. 4.

PLANT &c., FOR SALE & WANTED.

PLANT FOR SALE.

PURIFIERS.—Four 10 ft. square Purifiers, Dry Lutes, Valves, &c., complete, modern.
Two 16 ft. square Dry Lutes, Valve Lifting Gear, &c., modern.
Two 8 ft. square. Valves, Lifting Gear, &c.
Gasholder with Steel Tank, 10,000 c.ft. capacity.
Meters.—Rectangular Station Meter fitted with New Drum 15,000 c.ft. capacity.
Cylindrical Station Meter 10,000 c.ft. capacity, 10 in. Valves and Bye-Pass.
Station Governors.—Parkinson's, Cowan's, and Peebles' 4 in., 5 in., and 8 in.
Retort Ironwork for beds of 4's, 5's, 6's, 7's, and 8's. 22 in. by 16 in. Self-Sealing Mouthpieces. 6 in. Ascension Pipes and all to follow.
Washers and Tar Extractors.—"Livesey" and "Cripps," 100,000 to 250,000 c.ft. capacities.
Tar Extractors.—Two No. 6 "P. & A.," with 10 in. Bye-Pass, &c.
Acid Washer, 4 ft. by 4 ft. by 3½ ft., lead-lined.
Wilton's Patent Ammonia Liquor Still.
Cast-Iron Tower Scrubber.—4 ft. diameter by 16 ft. high.
Waller's Gas Boosters.—Two nearly new, Turbine driven.
Exhausting Sets.—Steam and Gas Engine-driven, 5000 to 20,000 c.ft. per hour capacity.
Storage Tanks.—Three Tar and Liquor, 6 ft. 6 in. diameter by 30 ft. long.
Several other Tanks, Rectangular and Cylindrical; also Tar Stills.
Tar and Liquor Pumps, Steam and Belt-Driven.
Air Receivers, Fans, Blowers, Valves, Rivetted Tubes, Girders, &c., &c.
Firth Blakeley, Sons, & Co., Ltd.
(Second-hand Plant Dept.),
Vulcan Ironworks, Church-Fenton, Leeds.
Telephone: 14, South Milford. Telegrams: Blakeley, Church-Fenton.

FOR SALE.—Sixteen 80-Light Gas METERS, wet type, of special design and high grade construction, fitted with Block tin measuring drums. Capacity 480 c.ft. per hour. Pressure 3 to 4 inches Water Gauge. Made by Messrs. Parkinson, Birmingham, Ref. 11/124, £6 each.
Six Wet GAS METERS of Superior make, fitted with copper measuring drums, heavily tinned. Capacity 1080 c.ft. per hour. Working pressure up to 6½ lbs. per square inch. These Meters have never been in commission. Ref. 11/794, £40 each. Made by Parkinson and Cowan.
Three Second-hand GAS METERS. Capacity 3000 c.ft. per hour, at 4 in. Water Gauge. Mounted in C.I. Cradles. By Messrs. Parkinson, Birmingham. Ref. 9/1897, £8 10s. each.
Address, in first instance, No. 7706, "GAS JOURNAL," 11, BOLT COURT, FLEET STREET, E.C. 4.

CONTENTS.

EDITORIAL NOTES.

A Fuel Council 129
A Gas Company Acquire Colliery Interests . 130
Increase in Railway Rates 130
From Electricity to Coal Carbonization . . 130
Report of the Fuel Research Board . . . 130
Co-partnership the Way to Industrial Peace 131
Amending Gas Legislation—Synthetic Nitrogen—Coal Output—Tar Specification for Road Surfacing—Coke-Oven Gas for Town Supply—Asking for Trouble—General Strike and Railway Funds 132
The Unemployed 133

Personal 133
Obituary—Daniel Irving 133
Electricity Supply Memoranda 134
National Gas Council 136
A Large Gas Company Acquires Colliery Interests 137
Federation of Gas Employers 137
The Coal Strike and its Aftermath—Through French Glasses 137
Australian Gas Institute—Extracts from the Address of the President, Mr. P. C. Holmes Hunt, M.Inst.C.E., F.I.C. 138
Fuel Research Board Report for 1925 . . . 140
Gasholder Welding 141
Western Junior Gas Association—Methods of Measuring Temperature. By S. Hole 142
Gas Bills for 1927 145
London and Southern District Junior Gas Association—Visit to the East Greenwich Works of the South Metropolitan Gas Company 146
American Gas Association—Notes from Reports and Papers—Fourth Article . . . 148
Glasgow's Enterprise—New Plant at Dawsholm 149
Forthcoming Engagements 149

CORRESPONDENCE.

Institution of Gas Engineers' Education Scheme 149

REGISTER OF PATENTS.

Submersible Burners—Hammond, C. F., and Shackleton, W. 150
Distance Control Apparatus—Edgar, W. R. . 150
Ammonium Sulphate Production—Sté. Anye. des Fours à Coke Semet-Solvay & Piette . 150
Charging Horizontal Retorts—Matthews, F. G., and Aldridge, J. G. W. 150
Teats for Gas Burners—Radiation Ltd., Yates, H. J., and Howlett & Co., Ltd. . . 150
Gasholders—Clayton, Son, & Co., Ltd., and Clayton, J. 151

LEGAL INTELLIGENCE.

Mr. George Helps's Bankruptcy—Public Examination 151
Workmen's Compensation Act Case—Commercial Gas Company's Offer 152

MISCELLANEOUS NEWS.

Competitive Street Lighting at Burnley—The Successes of Gas 152
Earby and Thornton Gas Inquiry 152
Gas Regulation Act Applications 153
New Showrooms at Wallsend 153
Coal Trade Reports—
North-East Coast 153
Yorkshire and Lancashire 153
Midlands 153
Current Sales of Gas Products 154
Trade Notes 154
Contracts Open 154
Stock Market Report 155

PARAGRAPHS.

Works' Libraries Campaign 135
Medical Men Agree 136
Separation of Ethylene and Benzole in Gas Analysis—A Work of Art 141
"Aluminium Facts and Figures" 147
Reduction in Price at York 153
Imperial Chemical Industries, Ltd.—Lectures to Outdoor Staff at Sheffield—Company Registrations in 1926—Issue of Stock in the North Middlesex Gas Company—Gas Display in Leeds—The "L & N" Low-Temperature Process 154

"JOURNAL" OFFICE TELEPHONE.

The "Journal" Office Telephone Number is "Central 6055."

For List of "JOURNAL" Advertisers, *see* p. 158.

G.J. 19-1-27.

"By far the lightest metal that is largely used in commerce."

Aluminium

FITTINGS (Burners, Globe-holders and Deflectors, Diffusers, Lamp-cases, etc.) are economical and keep colour well.

OVEN LININGS save enamelling, clean easily, last well, and are decidedly economical.

KITCHEN UTENSILS heat speedily, save expense and labour, and are permanently hygienic.

ROOFING withstands sulphur and ammonia fumes and cannot rust.

HANDBOOK OF

Aluminium

DATA FREE FROM

THE BRITISH ALUMINIUM Co., Ltd., Aluminium Producers, Adelaide House, London, E.C. 4.

The little more!

A Thomas Glover repair does not merely 'mend' your meters — it *renews* them.

The Thomas Glover Lorry Service also saves you the expense connected with handling your repairs.

Send your repairs to Thomas Glover.

Our Lorry will call for them.

THOMAS GLOVER & CO. LTD.

GOTHIC WORKS, ANGEL RD. EDMONTON, N.18

ORIGINAL DRY METER MAKERS
ESTABLISHED IN 1844

Branches at: BELFAST, BIRMINGHAM, BRISTOL, EDINBURGH, GLASGOW, MANCHESTER & NEWCASTLE-ON-TYNE

PARKINSON'S

PREPAYMENT METERS.

UNSURPASSED FOR QUALITY.

FITTED WITH LONG RANGE ATTACHMENT.

Outside Valve, Easily Accessible for Cleaning.

W. PARKINSON & CO.,

INCORPORATED IN PARKINSON & COWAN (GAS METERS), LTD.

COTTAGE LANE, CITY ROAD, LONDON, E.C.1.	BELL BARN ROAD, BIRMINGHAM.	MORNINGTON STREET, ORMEAU ROAD, BELFAST.
Telegrams: "INDEX, ISLING, LONDON."	"GASMETERS, B'HAM."	"PREPAYMENT, BELFAST."
'Phone Nos.: 4270 Clerkenwell	2945 Midland, B'ham.	3274 Belfast.